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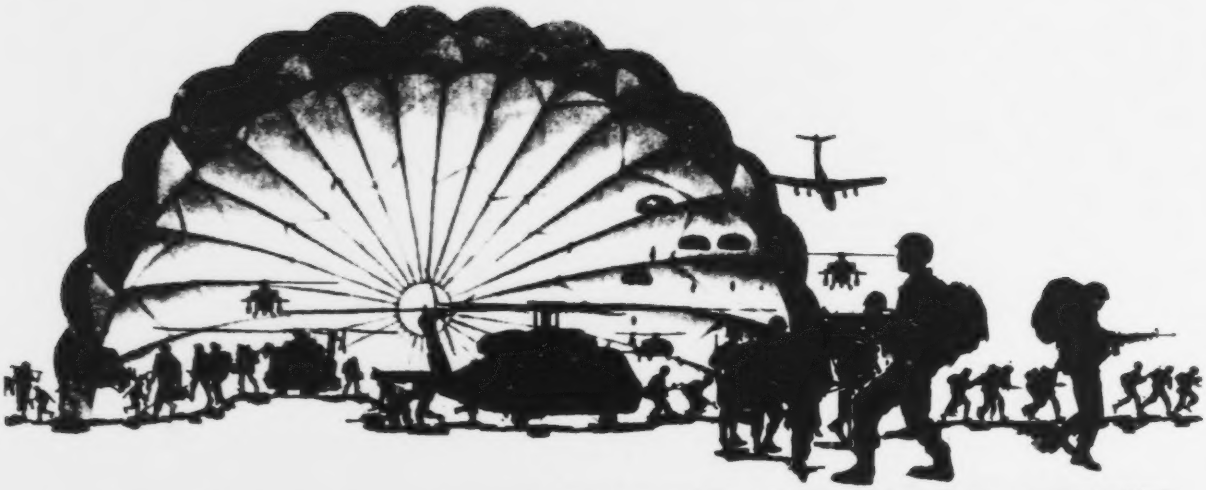

YOUR ARMY TODAY

AMERICA'S LANDPOWER IN TRANSITION

AIR UNIVERSITY PRESS
AIR UNIVERSITY (AU)
MAXWELL AIR FORCE BASE, ALABAMA 36112-5532

MAY 1989

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DEPARTMENT OF THE ARMY
UNITED STATES OF AMERICA
1775

Preface

The Department of Defense is organized on the concept that the day of land, sea, and air warfare is gone forever. The defense structure provides for the coordinated development of the land, sea, and air forces of the United States and for their employment as an integrated team. To serve as a member of an integrated team in joint operations you must know how your teammates in the ground forces operate.

This text provides a single source document for your understanding of the operational and tactical art of AirLand Battle. It uses US Army Field Manual (FM) 100-1, *The Army*; FM 100-5, *Operations*, and FM 101-5-1, *Terms and Symbols*.

Several people were instrumental in the development of this text. Special thanks to Marion S. Gorrie, text development specialist, Academic Publications Division, Air University Press; Dr Elizabeth D. Bradley, director of the Air University Press; Dr Patricia McGowen, chief of Academic Publications Division; Dorothy McCluskie, chief of Production Division, the editorial assistants in the Production Division; John Westcott, chief of Publications Design Branch; Kathryn Brown, education technician; and visual information specialists Peggy Greenlee and Herb Huie of Contract Graphics.

This text superseded AU-8, *US Army Forces*, 1985.

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FM 100-1

PART ONE -- THE ARMY

Part One is adapted from Field Manual 100-1, *The Army*, August 1986. It discusses the legal and historical foundations of the Army, the roles and missions of the Army, and how the Army is organized to execute its mission of national defense.

Chapter 1 The Foundations of the Army
Chapter 2 Roles and Missions of the Army
Chapter 3 Organizational Structure of the Army

The
E PLURIBUS UNUM
ARMY

Army landpower will continue to protect our nation and deter aggression. The Army carries out this basic responsibility in concert with the Navy, Air Force, and Marine Corps and with the military forces of our Allies. If the nation goes to war, the Army will not fight alone; we will fight as part of a joint and combined team. This manual emphasizes that spirit of joint and coalition warfare and I urge all soldiers and civilians to study it's contents.

JOHN A. WICKHAM, JR.
General, United States Army
Chief of Staff

AUGUST 1986

The Foundations of the Army

The American political system is rooted in an explicit recognition that all legitimate authority derives from the people. We acknowledge that each person has inalienable rights and is equal under the law. Our appreciation for the worth of the individual affects all public institutions in America, including the armed forces. In every important aspect, the United States Army reflects the democratic nature of our social and political structure—both directly, in the Army's purpose and legal basis, and indirectly, in the professional ethic that commits its members to serving the public good.

The Constitutional and Legal Basis

In the preamble to the Constitution of the United States, the nation's founders set forth the purposes of the federal union:

> We, the people of the United States, in order to form a more perfect Union, establish justice, insure domestic tranquility, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, do ordain and establish this Constitution for the United States of America.

The legal basis and framework for a military establishment charged to "provide for the common defense" are set forth in subsequent sections of the Constitution.

The framers of the Constitution established the principle of civilian control over the armed forces of the United States. They specified that Congress alone would have the power to raise and support armies and to declare war. The Constitution further provides that the president, as the nation's chief executive, be the commander in chief of the armed forces of the United States. This authority, coupled with treaty-making authority, appointive power—including the appointment of federal officers of the armed forces—and requirements to "... take care that the laws be faithfully executed ..." are the principal constitutional bases for presidential direction of national security affairs. Thus, the responsibility for providing the nation's defense through the armed forces of the United States is constitutionally shared by the civilian officials in the legislative and executive branches of the federal government.

Although the Constitution establishes a system of defense to protect the nation and its vital interests, it does not define that system. As a result, the national defense structure has taken many forms throughout our nation's history. The National Security Act of 1947, as amended, established the current structure for national defense.

This statute was enacted by Congress in recognition of the need for greater unity and coordination among the armed services. The act established the National Security Council, the Central Intelligence Agency, the Department of Defense (DOD), and the Organization of the Joint Chiefs of Staff. It established the position of secretary of defense, who is the principal assistant to the president in all matters relating to the DOD. It provided for the Department of the Army, the Navy (which includes the Marine Corps), and the Air Force under the direction, authority, and control of the secretary of defense.

In enacting this legislation, it was also the intent of Congress to:

- Provide a comprehensive program for the future security of the United States.
- Provide for the establishment of integrated policies and procedures for the departments, agencies, and functions of the government relating to the national security.
- Provide that each military department be separately organized under its own secretary.
- Provide for the establishment of unified and specified combatant commands, and a clear and direct line of command to such commands from the president and secretary of defense. (Although not defined in the act, the term *national command authorities* represents the authority vested in the president and the secretary of defense.)
- Eliminate unnecessary duplication in the Department of Defense.
- Provide more effective, efficient, economical administration of the Department of Defense.
- Provide for the unified strategic direction of the combatant forces, for their operation under unified command, and for their integration into an efficient joint team of land, sea, and air forces.

The National Security Act, as amended, is also the source from which the broad functions of the DOD are derived. As presently set forth in DOD Directive 5100.1, *Functions of the Department of Defense and Its Major Components*, 10 January 1986, the DOD maintains and employs armed forces to:

- Support and defend the Constitution of the United States against all enemies, foreign and domestic.
- Ensure, by timely and effective military action, the security of the United States, its possessions, and areas vital to its interest.
- Uphold and advance the national policies and interests of the United States.
- Safeguard the internal security of the United States.

The National Purpose and National Power

The Constitution and the Declaration of Independence give these elements of the national purpose:

- National independence.
- Preservation and expansion of human freedoms.
- Individual dignity and equality under the law.
- Human rights to life, liberty, and the pursuit of happiness.

From these components of the national purpose we derive US goals—the specific expressions of national purpose that provide the rationale for national security policies. The following basic goals have remained essentially unchanged since the late 1940s:

1. to preserve the independence, free institutions, and territorial integrity of the United States;
2. to preserve US and allied vital interests abroad; and
3. to help shape a world in which freedom and democracy can flourish—an international community in which states coexist without the use of force, and in which citizens are free to choose their own governments.

National power, the aggregate capacity of a state to safeguard its national interests and to influence the behavior of other states, has political, economic, sociopsychological, technological, and military elements. The implementation of a national strategy, such as containment of threats to national security, involves these components. Specific tasks supporting any national strategy are achieved through application of selected combinations of these components of national power. Thus, deterrence is the military component of a national strategy of containment. Application of one or all of the components of national power, including military power, may be required as the nation faces the challenges of contemporary international relations.

Military forces are needed to promote and protect US interests because conflict frequently occurs among nations. Conflicts among nations vary from minor disagreements to fundamental clashes over ideologies and national objectives. The majority of these conflicts are resolved peacefully through arbitration, negotiation, or compromise based on the judicious application of one or more of the elements of power by contending nations. In those situations that affect vital US interests, the national command authorities may consider the use of American military power. Therefore, the United States must prepare for the use of military power across the entire spectrum of conflict, from shows of force, through confrontations short of combat, to a range of combat operations that could even include nuclear war.

National Security Objectives

Our basic national security policy is to preserve the United States as a free nation with our fundamental institutions and values intact. The broad objectives of our national security policy are:

- To deter nuclear attack on the United States, its forces and allies, and discourage the use of nuclear weapons.
- To deter attacks of any kind against the United States, our allies, and against vital US interests worldwide, including sources of essential materials, energy, and associated lines of communication.
- To encourage and assist other nations in defending themselves against armed invasion, insurgencies, and terrorism.
- To discourage an enemy from attempting coercion of the United States, its allies, and friends.
- To, if deterrence fails, fight at the level of intensity and for the duration necessary to attain US political objectives.

All nations of the world must perceive that the United States has the forces to counter aggression and that we also have the will to use those forces. This is the essence of deterrence, and it applies to the entire spectrum of conflict.

National Security Strategy Formulation

The president is responsible for national security strategy. Assisting the president is the National Security Council (NSC) which assesses the objectives, commitments, and risks of the United States in relation to our military power. The NSC also considers policies on matters of common interest to the government agencies concerned with national security. A national strategy is developed and appropriate governmental agencies formulate their contributions. Military power is most effective when applied with other elements of national power to form a coherent national strategy.

The Joint Chiefs of Staff prepare the military strategy and strategic plans for the armed forces. The Joint Strategic Planning Document (JSPD) provides the advice of the Joint Chiefs of Staff to the president, the secretary of defense, and the NSC on the military strategy and force structure required to gain national security objectives. The JSPD includes a summary of force levels that would be required to execute the national military strategy with a reasonable assurance of success. The Joint Strategic Capabilities Plan (JSCP) issues guidance to the commanders of unified and specified commands and the chiefs of services for the accomplishment of military tasks. This tasking is based on the capabilities of available forces, intelligence assessments, and guidance issued by the secretary of defense. The Joint Chiefs of Staff direct the commanders of unified and specified commands to develop plans based on the guidance contained in the JSCP.

Unified, Specified, and Combined Commands

The national command authorities give overall strategic direction to our armed forces through the Joint Chiefs of Staff (composed of the chairman and each service chief) to the combatant commands. The military departments prepare and provide forces to these commands. Command is the exercise of leadership and power of decision over the armed forces to gain unity of effort toward a common military objective. Unity of effort among assigned service forces is achieved by the exercise of operational command by the unified or specified commander and by a sound command organization.

In unified commands, elements of two or more services are placed under a single commander, who has operational command over the assigned forces (land, sea, air). Service forces may be organized into a joint task force or a uni-service force. Specified commands have a broad continuing mission and are usually composed of forces from one service. Within these unified and specified organizations, each military department (Army, Navy, and Air Force) retains responsibility for administration and logistical support of its assigned forces.

Forces assigned to support alliance structures are said to conduct combined operations. Combined operations are conducted by forces of two or more allied nations acting together to attain the same objective. United States forces participating in combined operations are subject to command arrangements and authorities established in international agreements.

The principles guiding unified action apply to both joint and combined operations. Both types of operations employ forces with unity of command as an integrated land, sea, and air team. Unified commanders and their subordinate component commanders are given the operational authority to employ multinational forces, while each nation retains the responsibility for logistic and administrative support of its forces assigned to an alliance.

Land, Naval, and Air Forces

To achieve national military objectives, our military forces must be able to neutralize, destroy, or capture the enemy. Land, sea, and air forces produce these effects. Each force makes its contribution based on its characteristics and the principal medium in which it operates. Certain of these forces have greater capabilities than others to impose one or more of the three conditions. In concert with the others, each force contributes to achieving the national political objectives and is applied in a synchronized way to defeat the enemy.

The basic objective of **land** forces is to defeat the enemy's forces on land. The Army conducts combat operations on land that defeat the enemy and seize, occupy, and defend land area. The Marine Corps seizes or defends advanced naval bases and conducts land operations essential to the naval campaign.

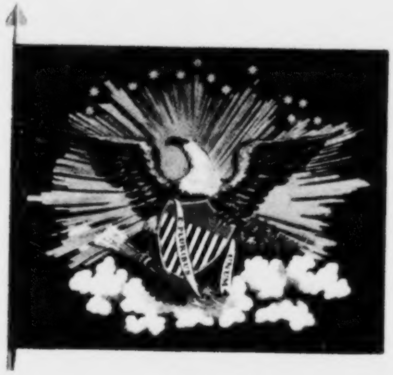
The basic objective of **sea** forces is to gain or maintain control of vital waters and to protect sea lines of communication. The Navy neutralizes, destroys, or captures enemy forces or enemy merchant ships and establishes local superiority (including air) in an area of naval operations. The Navy transports land forces to the theater of operations or to tactical objectives within the theater, supports land operations with carrier-based aviation and naval gunfire, and delivers logistical support to land and air forces.

The basic objective of **air** forces is to gain and maintain control of the air environment and to project combat power promptly wherever needed. These actions include deterring, neutralizing, or destroying the enemy's forces command and control mechanisms, and capacity to wage war. The Air Force provides rapid airlift of forces and materiel, active air defense cover over the land combat zone, surveillance and warning of threats, and attack or electronic suppression of both engaged and follow-on hostile land forces.

Historical Overview of the Army

The US Army, our principal land force, played a major role in the development of the United States. The Army was an important instrument in winning independence; in saving the nation from internal collapse; and in exploring, policing, building, and governing the West. Beginning with the Spanish-American War, the Army has supported US policy objectives abroad by protecting American interests, and by assisting other nations to preserve their freedom in face of outside aggression.

Early History. The genesis of the US Army is found in the colonial period of American history. No institution was more sharply molded during the colonial period than the military establishment. It has generally been accepted that on 14 June 1775, the Second Continental Congress created the first National Army or Continental Army that made the present Army the "senior service" among the military components of the Department of Defense.



Although the Flag Resolution of 14 June 1777, designated a flag for our then fledgling nation, the Army still had none to call its own. The Army flag evolved slowly.

One of the early regimental flags of the US Army depicts an eagle in flight over a base of white clouds. The design is based on the Great Seal of the United States of 20 June 1782. The original flag is now on display in Independence National Park at Pemberton House in Philadelphia.

Campaigns of the Revolutionary War*

Lexington	19 April 1775
Ticonderoga	10 May 1775
Boston	17 June 1775–17 March 1776
Quebec	28 August 1775 to July 1776
Charleston	28–29 June 1776
Long Island	26–29 August 1776
Trenton	26 December 1776
Princeton	3 January 1777
Saratoga	2 July–17 October 1777
Brandywine	11 September 1777
Germantown	4 October 1777
Monmouth	28 June 1778
Savannah	29 December 1778; 16 September–10 October 1779
Charleston	29 March–12 May 1780
Cowpens	17 January 1781
Guilford Court House	15 March 1781
Yorktown	28 September–19 October 1781

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*AR 672-5-1, *Military Awards and Decorations* (1984)

The contributions of the US Army and of its components have been of major importance in the development of the nation from a weak confederation of colonies to a leading world power. Many factors contributed to this transformation including the development of an army that was small but uniquely suited to the needs of the nation. In over 90 major wars, expeditions, campaigns, occupations, and other disturbances, this small force provided the security that made national expansion and progress possible during the nineteenth century.

Campaigns of the War of 1812*

Canada	18 June 1812–17 February 1815
Chippewa	5 July 1814
Lundy's Lane	25 July 1814
Blandensburg	17–29 August 1814
McHenry	13 September 1814
New Orleans	23 September 1814–8 January 1815

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*AR 672-5-1.

The Army also contributed to the development of the republic in other equally important ways. It explored and mapped the continent in expeditions like those of Lewis and Clark, pioneered in the construction of roads and railroads, and in the improvement of waterways and harbors. Also, the Army encouraged the formation of a national character by Americanizing the immigrant, pacifying the Indian, and educating the freedman.

Campaigns of the Mexican War*

Palo Alto	8 May 1846
Resaca de la Palma	9 May 1846
Monterey	21 September 1846
Buena Vista	22–23 February 1847
Vera Cruz	9–29 March 1847
Cerro Gordo	17 April 1847
Contreras	18–20 August 1847
Churubusco	20 August 1847
Molino del Rey	8 September 1847
Chapultepec	13 September 1847

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*AR 672-5-1.

The size and organization of the Regular Army changed frequently during the nineteenth century reaching its peak during the Civil War when the Union put two million people in the field. One million soldiers wore Confederate grey as brother met brother on the battlefield.

Few periods in American history have witnessed a greater or more significant change of direction in national policy than the nineteenth century. Throughout the eighteen hundreds, the Army continued to make major contributions, not only through wartime activities but also in opening the frontier and undertaking construction pro-

grams that assisted the expansion of commerce and industry.

Campaigns of the Indian Wars*

Miami	January 1790–August 1795
Tippecanoe	21 September–18 November 1811
Creeks	27 July 1813–9 August 1814; February 1836–July 1837
Seminoles	20 November 1817–31 October 1818; 28 December 1835–14 August 1842; 15 December 1855–May 1858
Black Hawk	26 April–30 September 1832
Comanches	1867–1875
Modocs	1872–1873
Apaches	1873 and 1885–1886
Little Big Horn	1876–1877
Nez Perces	1877
Bannocks	1878
Cheyennes	1878–1879
Utes	September 1879–November 1880
Pine Ridge	November 1890–January 1891

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*AR 672-5-1.

Campaigns of the Civil War*

Sumter	12–13 April 1861
Bull Run	16–22 July 1861
Henry and Donelson	6–16 February 1862
Mississippi River	6 February 1862–9 July 1863
Peninsula	17 March–3 August 1862
Shiloh	6–7 April 1862
Valley	15 May–17 June 1862
Manassas	7 August–2 September 1862
Antietam	3–17 September 1862
Fredericksburg	9 November–15 December 1862
Murfreesboro	26 December 1862–4 January 1863
Chancellorsville	27 April–6 May 1863
Gettysburg	29 June–3 July 1863
Vicksburg	29 March–4 July 1863
Chickamauga	16 August–22 September 1863
Chattanooga	23–27 November 1863
Wilderness	4–7 May 1864
Atlanta	7 May–2 September 1864
Spotsylvania	8–21 May 1864
Cold Harbor	22 May–3 June 1864
Petersburg	4 June 1864–2 April 1865
Shenandoah	7 August–28 November 1864
Franklin	17–30 November 1864
Nashville	1–16 December 1864
Appomattox	3–9 April 1865

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*AR 672-5-1.

The Spanish-American War in 1898 and the Philippine Insurrection in 1899 marked the end of the nineteenth century. These conflicts and the military involvements in China and Mexico ushered in the twentieth century in which the US Army again was destined to play a major role.

Campaigns of the War with Spain*

Santiago	22 June–11 July 1898
Puerto Rico	25 July–13 August 1898
Manila	31 July–13 August 1898

Philippine Insurrection

Manila	4 February–17 March 1899
Iloilo	8–12 February 1899
Malolos	24 March–16 August 1899
Laguna de Bay	8–17 April 1899
San Isidro	21 April–30 May 1899; 15 October–19 November 1899
Zapote River	13 June 1899
Cavite	7–13 October 1899; 4 January–9 February 1900
Tarlac	5–20 November 1899
San Fabian	6–19 November 1899
Mindanao	4 July 1902–31 December 1904; 22 October 1905
Jolo	1–24 May 1905; 6–8 March 1906; 11–15 March 1906; 11–15 June 1913

China Relief Expedition

Tientsin	13 July 1900
Yang-tsun	6 August 1900
Peking	14–15 August 1900

Mexican Expedition

Mexico 1916–17	14 March 1916–7 February 1917

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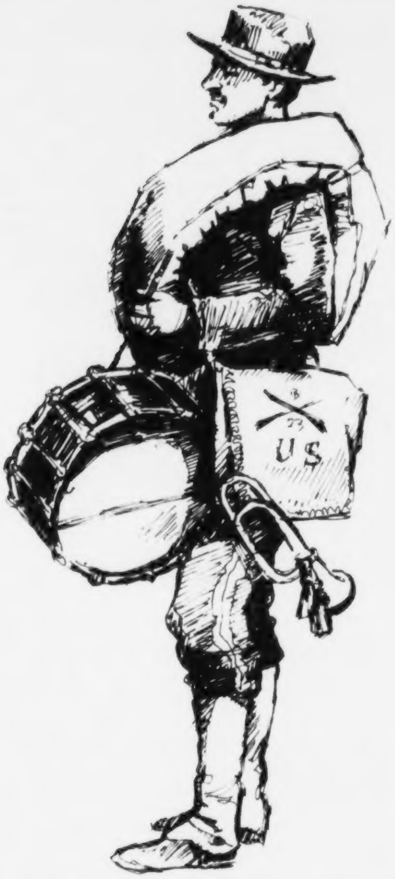
*AR 672-5-1.



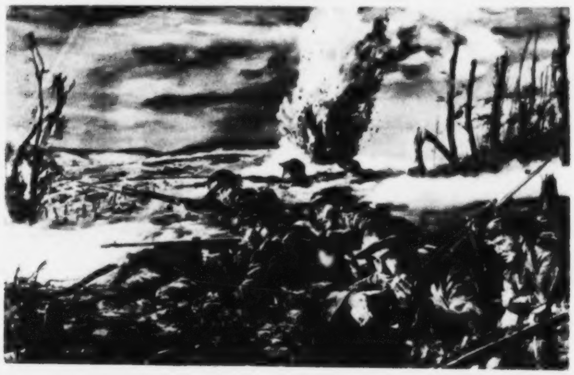
World War I. The onset of World War I brought about the passage of the National Defense Act of 1916, which was the first step in the mobilization of the United States for the war. During World War I, 62 Army divisions and 4 infantry regiments were organized—43 saw service overseas. Although the United States' participation in World War I lasted only 19 months, the Army suffered more than 240,000 of the 275,000 American battle casualties.

On 4 June 1920, after months of consideration of World War I experience and other factors, Congress enacted the new National Defense Act, one of the most constructive pieces of military legislation ever adopted. The act established the Army of the United States and divided it into three components; the Regular Army, the National Guard, and the Organized Reserves. The act also continued all the arms and services branches established before 1917, and created three new branches: the Air Service, the Chemical Warfare Service, and Finance Department.

Campaigns of World War I*

Cambrai	20 November–4 December 1917
Somme Defensive	21 March–6 April 1918
Lys	9–27 April 1918
Aisne	27 May–5 June 1918
Montdidier-Noyon	9–13 June 1918
Champagne-Marne	15–18 July 1918
Aisne-Marne	18 July–6 August 1918
Somme Offensive	8 August–11 November 1918
Oise-Aisne	18 August–11 November 1918
Ypres-Lys	19 August–11 November 1918
Saint-Mihiel	12–16 September 1918
Meuse-Argonne	26 September–11 November 1918
Vittorio Veneto	24 October–4 November 1918

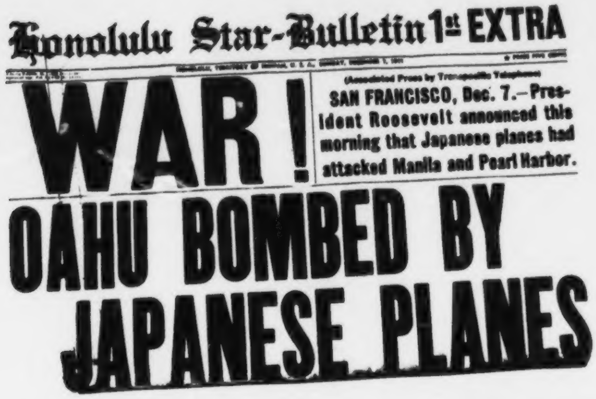
*AR 672-5-1.



World War II and Korea. With the Japanese attacks on 7 December 1941, first at Pearl Harbor and then on Clark Field near Manila, the United States was finally brought directly into World War II. With the German surrender on 7 May 1945 and the Japanese surrender on 2 September 1945, the most destructive war in history ended. At the end, the Army had more than 182,000 killed in action and more than 548,000 wounded.

Major changes were made in the Army organization as a result of World War II. Divisions were reorganized, antiaircraft and field artillery were merged into one branch, and the coast artillery was abolished. In addition the National Guard and the Organized Reserves were made an integral part of the Army of the United States.

Measures to unify and reorganize the nation's military services such as the National Security Act of 1949 and the Army Organization Act of 1950 were scarcely in effect before the outbreak of war in Korea. On 25 June 1950, the Communist government of North Korea sent its army south of the 38th parallel in an attempt to bring down the government of the Republic of Korea (South Korea).



Honolulu Star-Bulletin 1st EXTRA

WAR!

(Associated Press by Transpacific Telephone)

SAN FRANCISCO, Dec. 7.—President Roosevelt announced this morning that Japanese planes had attacked Manila and Pearl Harbor.

OAHU BOMBED BY JAPANESE PLANES

Campaigns of World War II American Theater*

Ground Combat	7 December 1941–2 September 1945

Asiatic-Pacific Theater*

Philippine Islands	7 December 1941–10 May 1942
Burma, 1942	7 December 1941–26 May 1942
Central Pacific	7 December 1941–6 December 1943
East Indies	1 January–22 July 1942
India-Burma	2 April 1942–28 January 1945
Aleutian Islands	3 June 1942–24 August 1943
China Defensive	4 July 1942–4 May 1945
Papua	23 July 1942–23 January 1943
Guadalcanal	7 August 1942–21 February 1943
New Guinea	24 January 1943–31 December 1944
Northern Solomons	22 February 1943–21 November 1944
Eastern Mandates	31 January–14 June 1944
Bismarck Archipelago	15 December 1943–27 November 1944
Western Pacific	15 June 1944–2 September 1945
Leyte	17 October 1944–1 July 1945
Luzon	15 December 1944–4 July 1945
Central Burma	29 January–15 July 1945
Southern Philippines	27 February–4 July 1945
Ryukyus	26 March–2 July 1945
China Offensive	5 May–2 September 1945
Ground Combat	7 December 1941–2 September 1945

European-African Middle Eastern Theater*

Egypt-Libya	11 June 1942–12 February 1943
Algeria-French	8–11 November 1942
Morocco	17 November 1942–13 May 1943
Sicily	9 July–17 August 1943
Naples-Foggia	9 September 1943–21 January 1944
Anzio	22 January–24 May 1944
Rome-Arno	22 January–9 September 1944
Normandy	6 June–24 July 1944
Northern France	25 July–14 September 1944
Southern France	15 August–14 September 1944
Northern Apennines	10 September 1944–4 April 1945
Rhineland	15 September 1944–21 March 1945
Ardennes: Alsace	16 December 1944–25 January 1945
Central Europe	22 March–11 May 1945
Po Valley	5 April–8 May 1945
Ground Combat	7 December 1941–2 September 1945

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*AR 672-5-1.

Reduced to a strength of less than 600,000 and affected by other post-World War II depreciations, the US Army faced major problems in gearing itself for war. Units that immediately deployed to Korea were understrengthed, lacked training, were partially equipped, and could only trade space for time against the North Korean invasion force. However, by the end of September 1950, the steadily growing United Nations Command shattered the North Korean army and drove its remnants out of the Southern Republic. For the next two years isolated scrimmages continued along the 38th parallel until an armistice was finally concluded on 27 July 1953.

Campaigns of the Korean War*

UN defensive	27 June–15 September 1950
UN offensive	16 September–2 November 1950
CCF intervention	3 November 1950–24 January 1951
First UN counteroffensive	25 January–21 April 1951
CCF spring offensive	22 April–8 July 1951
UN summer-fall offensive	9 July–27 November 1951
Second Korean winter	28 November 1951–30 April 1952
Korea, summer-fall 1952	1 May–30 November 1952
Third Korean winter	1 December 1952–30 April 1953
Korea, summer 1953	1 May–27 July 1953

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*AR 672-5-1.

Vietnam. The US military presence in the Republic of Vietnam was based on American determination to honor a long-standing commitment to help the South Vietnamese defend against insurgency and aggression directed and supported by the Communist regime of North Vietnam. After commitment of US combat forces in 1965 until the end of June 1968, the US Army expanded from a

Vietnam Campaigns*

Vietnam advisory campaign	15 March 1962–7 March 1965
Vietnam defense campaign	8 March 1965–24 December 1965
Vietnam counteroffensive	25 December 1965–30 June 1966
Vietnam counteroffensive, phase II	1 July 1966–31 May 1967
Vietnam counteroffensive, phase III	1 June 1967–29 January 1968
Tet counteroffensive	30 January 1968–1 April 1968
Vietnam counteroffensive, phase IV	2 April 1968–30 June 1968
Vietnam counteroffensive, phase V	1 July 1968–1 November 1968
Vietnam counteroffensive, phase VI	2 November 1968–22 February 1969
Tet 69 counteroffensive	23 February 1969–8 June 1969
Vietnam summer-fall 1969	9 June 1969–31 October 1969
Vietnam winter-spring 1970	1 November 1969–30 April 1970
DA sanctuary counteroffensive	1 May 1970–30 June 1970
Vietnam counteroffensive, phase VII	1 July 1970–30 June 1971
Consolidation I	1 July 1971–30 November 1971
Consolidation II	1 December 1971–29 March 1972
Vietnam cease-fire	30 March 1972–28 January 1973

*AR 672-5-1.

strength of 969,000 to more than 1,569,000. With the inactivation of the US Military Assistance Command Vietnam on 28 March 1973 the US Army ended active participation in the Vietnam conflict.

Worldwide Requirements. At the end of the Vietnam conflict, the Army reduced its strength to 782,000 though its strategic requirements were being increasingly challenged. The defense of the North Atlantic Treaty Organization (NATO) remains the cornerstone of foreign policy, however, threats to US interests outside NATO have emerged and are more and more significant. Force modernization programs during the last decade have provided the Army with the structure and equipment necessary to successfully meet the threats to vital US national interest.

Lebanon	1 July 1958–1 November 1958
Berlin	14 August 1961–1 June 1963
Dominican Republic	28 April 1965–21 September 1966
Grenada	25 October 1983–2 November 1983

*AR 672-5-1.

Summary

Throughout its history, the Army has upheld the principle of the preeminence of civilian authority. Today, the Army acts in concert with other services and as a member of an interallied military combination in support of the national objectives of the United States.

When we were needed, we were there.

CHAPTER 2

Roles and Missions of the Army

Air Force Manual 1-1, *Basic Aerospace Doctrine of the United States Air Force*, spells out the fundamental roles and precepts of the Air Force. This chapter, using Field Manual (FM) 100-1, *The Army*, discusses the roles and missions of the Army, expressing its fundamental role in helping to secure national policy objectives. This chapter further describes the broad roles and missions, which, in concert with sister services and allies, are the essential underpinnings of national security.

The increasingly dynamic nature of today's international environment accentuates the unique and vital role of the Army in the overall national security structure of the United States. The Army's capability to apply force and to control land area affords the national command authorities a wide range of options. The success of Army forces depends largely on the coordinated development of the land, sea, and air forces of the United States and on their employment as an integrated team. A mobilization base to support the armed forces and to serve as a reserve during mobilization is fundamental to the effectiveness of these forces, especially the Army forces.

In the majority of recorded wars, land power has ultimately been the decisive element. Although the power to deny or to destroy is possessed by all the military services, only ground forces, in concert with tactical air power, possess the capability to exercise direct, continuing, and comprehensive control over land, its resources, and its peoples. Land forces thus perform important, and largely unique, functions besides denial and destruction: land power can make permanent the otherwise transitory advantages achieved by air and naval forces alone. Thus, the Army is the decisive component of military force by virtue of its ability to control the land areas essential to people and nations. People live on land; ultimately, the control of land determines the destiny of people and nations.

During peace, the mission of Army forces is deterrence—the preparation of field units ready to perform their wartime missions. During war, the mission of Army forces is to render the enemy's forces ineffective (fig. 2-1). The Army may employ all means except those banned by international agreement or whose employment would conflict with national policy. The possibility that an enemy may use weapons banned by international agreement requires the Army to prepare countermeasures.

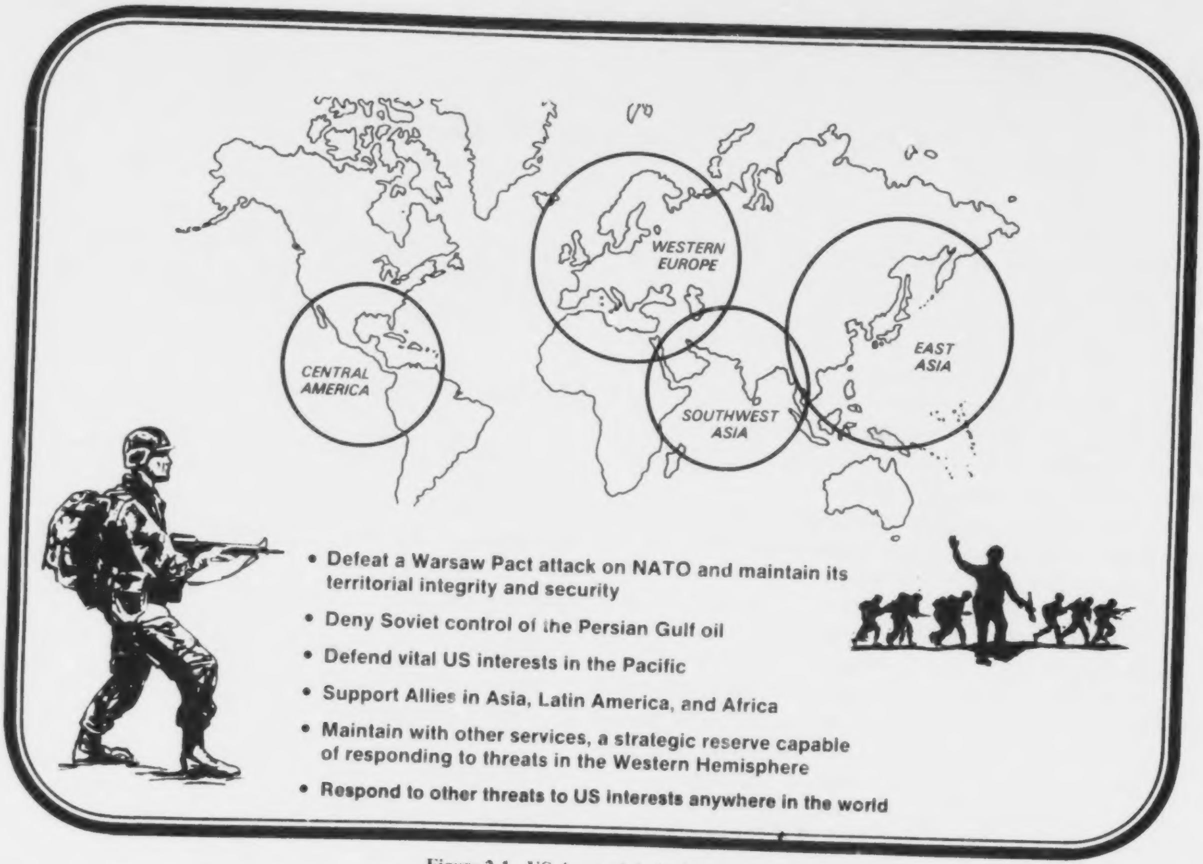
The shock action and firepower of well-supported combat forces is the essence of the US Army. Warfighting, the imposition of our will by force, determines how the Army is organized, equipped, and trained.

The Spectrum of Conflict

In a narrow sense, war is a clash between opposing military forces. In a broader sense, it includes the integration and orchestration of political, economic, psychological, technological, and diplomatic means to attain the national political purposes for which the war is fought. Also, war is an effort to frustrate similar means of an adversary. Confrontation and conflict can occur without invoking military options. For that portion of the conflict spectrum involving military action, three generalizations are used (fig. 2-2).

1. **General war**—armed conflict between major powers, in which the total resources of the belligerents are employed and the national survival of a major belligerent may be in jeopardy.
2. **Limited war**—armed conflict between two or more nations, at an intensity below that of general war, where means and/or ends are constrained.
3. **Low-intensity conflict**—a limited politico-military struggle to achieve political, social, economic, or psychological objectives. It is often protracted and ranges from diplomatic, economic, and psychosocial pressures through terrorism and insurgency. Low-intensity conflict is generally confined to a geographic area and is often characterized by constraints on the weaponry, tactics, and the level of violence.

The Army and General War. General war may involve the use of nuclear and chemical weapons and enemy use of biological weapons. Before a war, the Army's forward-deployed forces, standing guard with other US and allied forces and backed by US strategic reserves, serve notice that aggression will be resisted. If war comes, these forces defeat the enemy's military forces and crush the will to continue waging war. The Army contributes to the successful prosecution of general war by its ability to conduct the full range of land combat operations and by its staying power in prolonged military campaigns. World Wars I and II are examples of general war.



- Defeat a Warsaw Pact attack on NATO and maintain its territorial integrity and security
- Deny Soviet control of the Persian Gulf oil
- Defend vital US interests in the Pacific
- Support Allies in Asia, Latin America, and Africa
- Maintain with other services, a strategic reserve capable of responding to threats in the Western Hemisphere
- Respond to other threats to US interests anywhere in the world

Figure 2-1. US Army global missions.

The Army and Limited War. Limited war involves sustained combat between regular forces at levels short of general war. The conflicts in Korea and Vietnam are examples of limited war. The restrained use of nuclear or chemical weapons, or enemy use of biological weapons, is possible in limited war. The Army fields units tailored to limited wars that may confront the United States and its allies. An Army capability for worldwide deployment is essential if the United States, in concert with its allies, is to respond appropriately to the wide variety of challenges likely to be encountered.

The political situation at anytime may require employment of armed forces in wars with limited objectives. In such cases, the objectives ordinarily will be the neutralization or destruction of the enemy's armed forces and the restoration of the political and territorial integrity of the friendly nation. Hostile forces in such limited wars are likely to be supported by other major powers. Often such forces will be composed of field units inured to hardship and rarely susceptible to effective interdiction by air or sea forces. Additionally, the nature of the war may dictate, at least initially, operations in what had been friendly territory. And, finally, political considerations may prevent measures against powers supporting the hostile forces. The continuing possibility of such limited wars requires rapidly deployable Army forces capable of immediate commitment to combat. Army forces committed in such wars and supported by sea and air forces may be located a great distance from the continental United States. Army units organized, trained, and available for commitment in limited wars could also be restricted in general war.

The Army and Low-Intensity Conflict. Low-intensity conflict involves military action below the level of sustained combat between regular forces. Operations may involve some formations of regular forces as well as sophisticated weapons and could, if not contained or terminated, escalate into more intense operations. Success in achieving US national objectives in a low-intensity conflict will ordinarily rule out the protracted commitment of US forces in a combat role. Political, economic, social, and psychological initiatives are necessary to achieve lasting success in the low-intensity conflict arena. Ter-

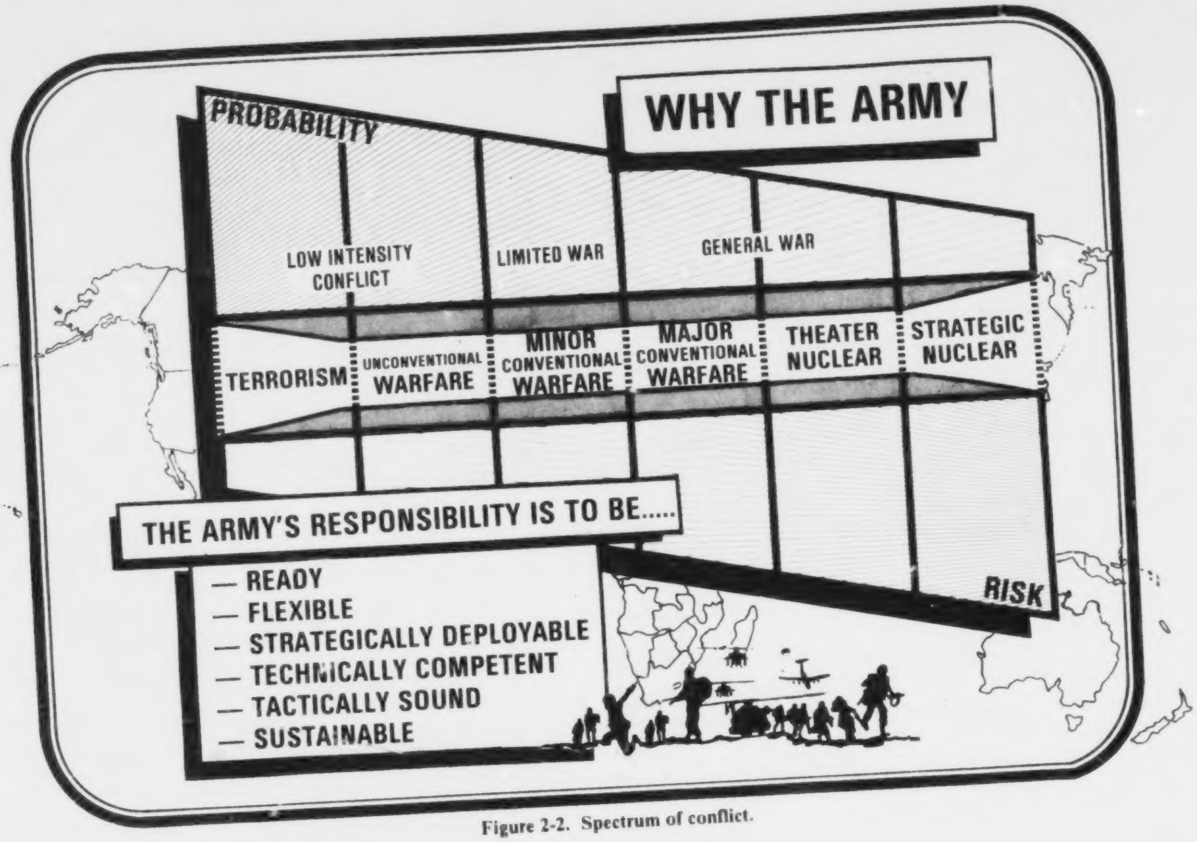

WHY THE ARMY
PROBABILITY
LOW INTENSITY CONFLICT
LIMITED WAR
GENERAL WAR
TERRORISM
UNCONVENTIONAL WARFARE
MINOR CONVENTIONAL WARFARE
MAJOR CONVENTIONAL WARFARE
THEATER NUCLEAR
STRATEGIC NUCLEAR
RISK
THE ARMY'S RESPONSIBILITY IS TO BE.....
— READY
— FLEXIBLE
— STRATEGICALLY DEPLOYABLE
— TECHNICALLY COMPETENT
— TACTICALLY SOUND
— SUSTAINABLE

Figure 2-2. Spectrum of conflict.

rorist or limited battlefield use of chemical or biological weapons, or even nuclear weapons, is possible. The Army's missions could involve peacekeeping operations, foreign internal defense, peacetime contingency operations, terrorism counteraction, and military operations to protect high-value areas or to defeat hostile forces.

The Army's Strategic Roles

However war is categorized, certain considerations fundamentally define the Army's roles. Since war is primarily a politically directed act for political ends, the conduct of a war, in terms of strategy and constraints, is defined primarily by its political objectives. Also, since military forces are instruments of political purpose, the military goal must be to further that purpose. Such requirements and limitations as are inherent or implied in political purposes must also be reflected in military missions and tasks.

The scope and intensity of warfare are therefore defined and limited by political purposes and military goals. The interactions of military operations, political judgments, and national will further define the objectives in a conflict and determine its duration and the conditions for its termination.

The US Army is the nation's primary land power force and plays a unique and irreplaceable role in attaining victory. By virtue of its capability to establish and maintain control over land, the Army must have the ability to operate across the spectrum of conflict. In a dynamic international environment, this capability provides a hedge against uncertainty and a full range of choices in foreign policy: in negotiating treaties, in dealing with foreign governments, and in establishing alliances for mutual security. In conjunction with the other military services, the Army fulfills three major strategic roles: conflict prevention, conflict control, and conflict termination.

Conflict Prevention. Likely conflict situations can be forecast through analysis of the national interests, goals, and policy objectives of the United States, its allies, and potential adversaries (fig.2-3). Strategies can be developed to anticipate many potential problems and lead to their resolution. Such strategies combine the elements of national power to reach a solution acceptable to the parties in the dispute without resort to the use of force.

The deterrent value of military forces is not simply a

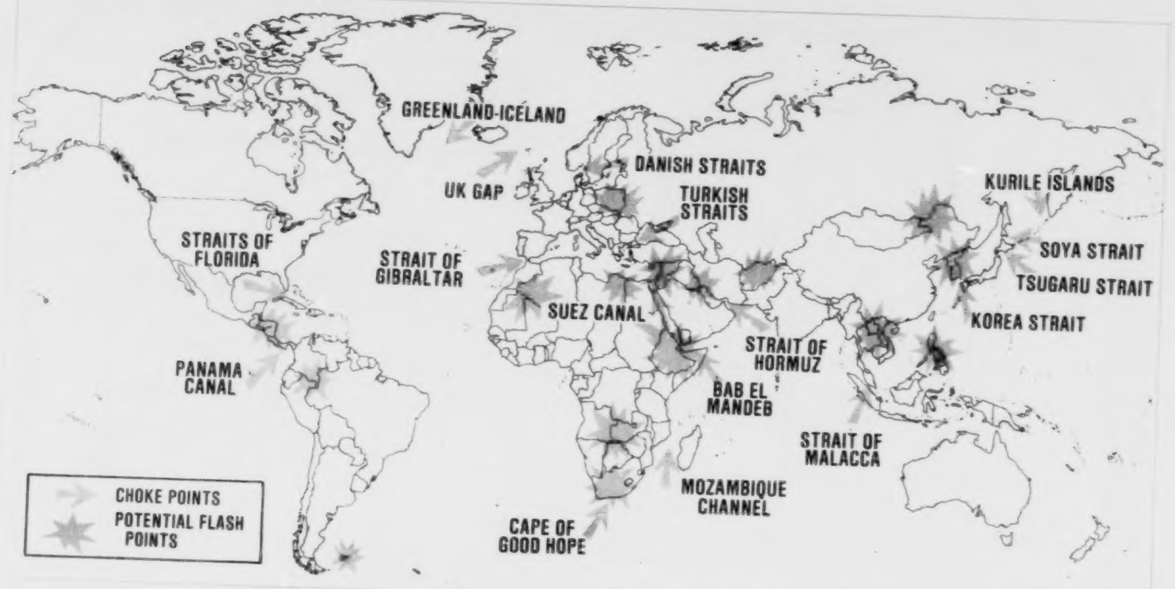


Figure 2-3. Major global choke points and potential flash points.

function of size, quality, and operational capabilities. It depends principally on the perceptions of an adversary regarding the effectiveness of our forces and our national will to employ them. An evident ability and will to wage war are essential to deterrence. The Army's current forces provide the national command authorities with a full range of options. These forces convince an adversary that the nation has conventional and nuclear warfighting ability and the resolve to fight wars in defense of vital interests. Forward-deployed Army forces signify regions of US vital interests, and signal the determination that aggression will not be tolerated. Their presence commits the prestige and honor of the United States to stated national objectives. The mobilization of Reserve components and the deployment of Army forces in times of crisis are the gravest responses the nation can make short of war and demonstrate the national will.

Conflict Control. The advent of hostilities will probably include political initiatives to limit the scope of conflict. These initiatives may limit geographical areas of operation, rule out specific weapon systems, or create conditions conducive to negotiations. They may include:

- Respecting the neutrality of nations not involved in the conflict.
- Adopting constraints on the use of special weapon systems.
- Proposing a cease-fire.

Acting quickly, decisively, and in a manner consistent with expressed political goals is essential to conflict control. The piecemeal application of Army forces to control conflict is of limited value. Land forces must be committed at a level of strength that, from the outset, provides a favorable ratio of combat power to ensure a swift military decision.

Conflict Termination. The destructive power of modern weaponry means its use could destroy the very objectives each side seeks to attain. Therefore, a prudent military strategy provides for early achievement of national political aims and early conflict termination. Planning for conflict termination on terms favorable to the United States focuses on attainment of military objectives derived from political guidance and goals.

Army forces can terminate conflict by destroying the enemy's will to resist. The Army closes with and defeats the enemy forces, seizes and controls critical land areas and enemy populations, and defends those areas critical to US national interests.

Supplementary Roles. The Army exists to defend the nation, but it can also contribute to the general welfare in peacetime. Such involvement is constrained by law, tradition, and the need to maintain the Army's readiness to fulfill its primary mission. However, within these limitations, the Army:

- Provides humanitarian relief during national disasters.
- Assists civilian communities during civil disturbances in support of civilian police forces.
- Assists civilian communities with civic-action programs
- Improves flood control and navigation.

- Adds to the nation's scientific and technological capacity through research and development programs.

Because the Army reflects the nation's values, it also provides equally for the betterment of those citizens who serve in uniform by equipping them with technical, managerial, and leadership skills of great value to the civilian sector. These roles are positive contributions to the nation's well-being.

The Army and Strategy Formulation

The Army, through its members assigned to the Office of the Joint Chiefs of Staff, the Office of the Secretary of Defense, and to unified and specified commands, contributes to the formulation of military strategy. Through the Army planning system, force planning, and research, development, and acquisition of arms and equipment, the Army provides the forces in peacetime to deter war and to fight if deterrence fails. Through contingency planning and exercises, the Army refines its concepts and hones its skills to ensure land forces can best be employed to protect US interests and gain US objectives.

National security depends on many factors to include the maintenance of strong military forces and on effective planning for their use. The principal purpose of military planning is to provide the most effective use of military forces in meeting challenges to our security interests. In doing so, the Army individually, and in concert with the other services, seeks to:

- Base military planning on the most current guidance, especially regarding assumptions on the actions that the United States would take before hostilities.
- Provide timely multiple military options for consideration by the national command authorities.
- Inform the national command authorities of the risks associated with the various options and provide judgments regarding the most effective use of additional resources in reducing those risks.

Security Assistance and International Cooperative Activities

United States national security interests are well served by the stability and security of our allies and other nations that share our goals of independent development in a climate of peace and freedom. Security assistance programs of the departments of state and defense provide economic and military support and other services essential to these nations' stability and security. The Army makes an important contribution to these programs through partnership activities and by satisfying assistance obligations. Military advisory and assistance programs are instrumental in implementing US national security policies. A variety of international programs is widening the "two-way street" in relations with our overseas partners. The Army shares in the logical outgrowth of these programs—the benefits of mutual friendship, cooperation, understanding, and resolution of tension—all of which serve the nation's interests.

Summary

The Army's primary task is to deter war by being prepared to fight and win on the battlefield. Yet fulfilling this task requires that the Army be a value-centered institution with a moral justification rooted in the fundamental principles cherished by all freedom-loving peoples and on the values stated in our Constitution. Consequently, the Army must be composed of professionals who understand and practice the values of the professional Army ethic and the supporting individual values of courage, commitment, candor, and competence. The challenge facing the Army today is that somewhere, sometime, the success or failure of critical national policies will once again rest on the professionalism of well-trained, well-led soldiers. The Army of the United States of America must stand ready to meet that challenge.

CHAPTER 3

Organizational Structure of the Army

The mission of the Army, to "provide for the common defense," is translated from words to substance when combat units are raised, trained, and equipped to guard freedom's frontier. Today's Army stands ready to meet the requirements for national security as it has for the last two hundred years.

The Composition of the Army

Title 10, United States Code, Section 3062, defines the primary roles of the Army and delineates its composition:

> In general, the Army, within the Department of the Army includes land combat and service forces and such aviation and water transport as may be organic therein. It shall be organized, trained, and equipped primarily for prompt and sustained combat incident to operations on land. It is responsible for the preparation of land forces necessary for the effective prosecution of war except as otherwise assigned and, in accordance with integrated joint mobilization plans, for the expansion of the peacetime components of the Army to meet the needs of war.
>
> The Army consists of the Regular Army, the Army National Guard of the United States, the Army National Guard while in the service of the United States, and the Army Reserve; and all persons appointed or enlisted in, or conscripted into, the Army without component.
>
> The organized peace establishment of the Army consists of all military organizations of the Army with their installation and supporting auxiliary elements, including combat, training, administrative and logistic elements; and members of the Army including those not assigned to units necessary to form the basis for a complete and immediate mobilization for the national defense in the event of a national emergency.

The Total Force

In national security planning, US active and reserve component forces and allied forces are conceived as an entity, the Total Force. This force has a military effectiveness greater than the sum of its separate parts. In practical terms, this means that the Department of Defense and the individual services consider the capabilities of these forces, both in primary and alternate roles, when structuring US forces or planning their employment. Total Force planning, budgeting, and operations can increase employment options for specific weapon systems and expand the effective roles of Reserve and National Guard forces. Also, Total Force planning can take allied defense efforts more fully into account and promote interservice and and intra-alliance support.

Within the Army, this policy is reflected as a Total Army bond among the Active Army, Army National Guard, Army Reserve, and the civilian work force. It is expressed in the balance of our force structure and in equipment modernization programs. Total Army planning reflects active cooperation and affiliation between active and reserve component units. It increases the mobilization potential of reserve units and ensures their timely availability in wartime.

The Comptroller of the Army issued the Army Budget for FY 88-89, which projects the Army force authorizations mix by percentage of combat function within each component, as of September 1988, will be

	Active Army	National Guard	Army Reserve
Combat	55	70	21
Support	45	30	79

Civilians are a large and important part of the Total Army. They occupy positions critical to the Army's mission. Only through the integrated efforts of dedicated civilians and soldiers can the Army perform its mission and make the most effective use of its resources. Many officers and enlisted persons will supervise civilian employees sometime during their careers. Similarly, many civilians will supervise soldiers. Although there are fundamental differences between civilians and soldiers, there are commonalities of mission, professional values, and ethics. By focusing on these commonalities, Army leaders can create and sustain a "Total Army team" dedicated to mission accomplishment.

Manning the Army

Soldiers are the heart of today's Army. In recent years, efforts to recruit and retain quality soldiers have been successful as evidenced by the readiness and competency of our present force. However, the future demands that we keep pace with the accelerating changes in personnel requirements due to technological improvements in equipment, modernization of warfighting doctrine and streamlining of units in the force structure. Furthermore, to retain good soldiers, they and their families deserve a quality environment in which to serve and live.

Total End Strength. The active military end strength remained at 780,800 for FY 85 and FY 86 (fig. 3-1). This was made possible by an aggressive civilian substitution program, application of productivity-enhancing technology, and transfer of appropriate missions to the Reserve components (RC). Army National Guard (ARNG) Selected Reserve strength increased from 439,952 in FY 85 to 450,496 in FY 86. The US Army Reserve (USAR) strength increased from the FY 85 level of 292,080 to 310,650 in FY 86. Through application of innovative productivity programs and sound management techniques, the Army reduced our civilian strength slightly in FY 86 and FY 87.

The Active component (AC) strength increased marginally to approximately 780,900 in FY 87. The Selected Reserve continued an upward trend with the ARNG strength increasing to 462,800 and the USAR strength rising to 327,600. Civilian strength in FY 87 was adjusted for 2,500 ARNG military technicians and additional supply and maintenance personnel to comply with core logistics provisions described in the FY 86 Joint Authorization Conference Report. The civilian strength is programmed to remain relatively stable through the outyears. This stability in active and civilian strength reflects efforts to improve output through productivity-enhancing technology rather than increases in the number of people.

The New Manning System. In 1981, the Active Army implemented a New Manning System (NMS) to improve combat effectiveness by reducing personnel turbulen and fostering unit cohesion, esprit, and loyalty in Arm units. The program consists of two major subsystem COHORT (Cohesion, Operational Readiness, Training Unit Replacement for the Active Army and the U Army Regimental System (USARS). Initially, only th infantry, armor, and cannon field artillery combat arm were involved in the execution of the program. Comba support and combat service support (CSS) arms have bee integrated into the program where practicable an necessary.

Active Army COHORT unit replacement is unde development to enhance combat effectiveness by reducing personnel turbulence in combat arms battalion- an smaller-size units. The concept is based on the precept of stabilization and unit replacement to foster cohesio and efficiency of training resulting in improved combat readiness. First-term soldiers and career soldiers in battalion-size and smaller units will be stabilized within the organization for three to five years. The long-term relationship fosters greater horizontal (peer) and vertical (chain of command) bonding within the unit. In addition, commanders have time to develop long-range training objectives for obtaining higher performance standards than currently attainable with an individual replacement system.

Through calendar year 1985, 122 company-size and 13 battalion-size units were activated. An additional 23 company-size COHORT units were activated in FY 86 to replace units reaching end-of-life cycle. During FY 87 the COHORT program activated 16 companies and 11 battalions.

Emerging results of the comparative COHORT to non-COHORT evaluation reflect vastly improved stability (leaders and first termers serving together for a full three years) in COHORT units. The evaluation program will continue to identify the strengths and weaknesses of the COHORT unit replacement program. Comparison of COHORT to non-COHORT units will provide readiness and costing data for determining progress with the program and adjustments required to expand unit involvement on a deliberate growth path through Army-wide participation. The COHORT unit replacement program will remain consistent with recruiting missions, end-strength ceilings, training base capacities and force modernization and structure compatibilities.

The USARS is designed to enhance combat effectiveness. Its framework provides the opportunity for affiliation, develops loyalty and commitment, fosters an extended sense of belonging, improves unit esprit, and institutionalizes the warfighting ethos. A regiment within the USARS is defined as a single or a group of like-type units (infantry, armor, signal, etc.) designated with a unique regimental color (fig. 3-2). The regiment is formed for the purpose of providing an affiliated soldier with the opportunity for long-term identification, the poten-

TOTAL ARMY END STRENGTH

	FY 85	FY 86	FY 87
Active Army	780,787	780,800	780,900
Army National Guard	450,696	460,137	472,505
Selected Reserve*	(439,952)	(450,496)	(462,800)
Inactive National Guard	(10,744)	(9,641)	(9,705)
Army Reserve	593,905	629,558	663,727
Selected Reserve**	(292,080)	(310,650)	(327,600)
Individual Ready Reserve	(301,825)	(318,908)	(336,127)
Total Military end strength***	1,512,819	1,541,946	1,571,300
Civilian****	419,917	412,478	410,530

* Includes active Guard/Reserve.

** Includes Active Guard/Reserve and individual mobilization augmentees.

*** Includes Active Army and Selected Reserve only.

**** Includes Reserve component technicians counted in Reserve component end strength accounts.

Figure 3-1.

tial for recurring assignments, and the basis to perpetuate history, customs, and tradition.

Affiliation is the opportunity for soldiers to associate voluntarily with the regiment of their choice for purposes of career development and homebasing. The goal is for 100 percent affiliation of all Army officers, warrant officers, and enlisted personnel. Career-long affiliation is the desired goal but opportunity for change is built into the program.

Normally soldiers will affiliate with the first regiment they are assigned to and stay with that regiment throughout their careers. For example, Joe Jones joins the 16th Infantry Regiment while he is assigned to the 1st Battalion, 16th Infantry, at Fort Riley, Kansas. When he is reassigned overseas, he would be assigned within his regiment to the 2d Battalion, 16th Infantry, in West Germany, or wherever the sister battalion is located. If Private Jones served outside his normal duty, he would still remain affiliated with the regiment and would be on an "extra regimental assignment."

There were 15 active combat arms regiments in the system in FY 1985. During FY 1986 combat support and combat service support regiments joined the system, bringing the total to 49 regiments. The USARS is programmed for expansion through FY 1992 to a total of approximately 180 regiments.

Organization of the Army

The Department of the Army (DA) is organized in a manner similar to the Department of the Air Force. The DA includes the headquarters of the major field units (called major commands [MAJCOMs]), active forces, reserve components, installations, and activities under the control or supervision of the secretary of the Army. The major elements are Headquarters, Department of the Army, and Army field commands.

Headquarters, Department of the Army. Headquarters, Department of the Army is the executive part of the Army and is composed of two elements: The office of the secretary of the Army and the Army staff. It exercises directive and supervisory functions over all facets of the Army.

Office of the Secretary of the Army. The secretary of the Army is the head of the DA; subject to the direction, authority, and control of the president as commander in chief, and of the secretary of defense. The secretary of the Army is responsible for and has the authority to conduct all affairs of the Army establishment, including but not limited to those necessary or appropriate for the training, operations, administration, logistics support and maintenance, welfare, preparedness, and effectiveness of the Army. The secretary is also responsible for all other activities as prescribed by the president or the secretary of defense as authorized by law, including civil functions. Currently the secretary of the Army is authorized four assistant secretaries in the field of: civil works; installations, logistics, and financial management; personnel and reserve affairs; research, development, and acquisition (fig. 3-3).

Headquarters, US Army staff. The Army staff is the military staff of the secretary of the Army. The principal elements of the Army staff are the Army general staff, the special staff, and those other staff agencies required at Headquarters, Department of the Army. The chief of staff is a member of and presides over the Army staff (fig. 3-4).

Army field commands. Other command structures, outside the Army staff, are the command organization of the Army's major commands. The major commands are:

Army Forces Command (FORSCOM) (Fort McPherson, Georgia) has the mission (similar to Tactical Air Command) to organize, train, equip, and maintain the combat readiness of all active duty and reserve component units in the continental United States (CONUS) for deployment in support of the plans of the unified commands. Active component units report through their tactical chain of command for development to the commander, Forces Command. Reserve component units are organized into five geographical armies, each commanded by a lieutenant general—First US Army, Fort Meade, Maryland; Second US Army, Fort Gillem, Georgia; Fourth US Army, Fort Sheridan, Illinois; Fifth US Army, Fort Sam Houston, Texas; and Sixth US Army, Presidio of San Francisco, California. The Third US Army, Fort McPherson, Georgia, is the Army component dedicated to US Central Command.

Training and Doctrine Command (TRADOC) (Fort Monroe, Virginia) has the mission (similar to Air Training Command and Air University) to develop and manage training programs, and to supervise the training of individuals and combat development activities. Training is accomplished through 24 service schools, 8 Army training centers, and 4 ROTC regions that service almost 2,000 high schools, colleges, and universities. All Army doctrine and evaluation programs are prepared under the supervision of TRADOC.

Army Materiel Command (AMC) (Alexandria, Virginia) has the mission (similar to Air Force Systems Command and Air Force Logistics Command) to perform assigned materiel functions for DA. These functions include research and development, product engineering, test and evaluation, procurement and production, inven-

ARMY INSIGNIA

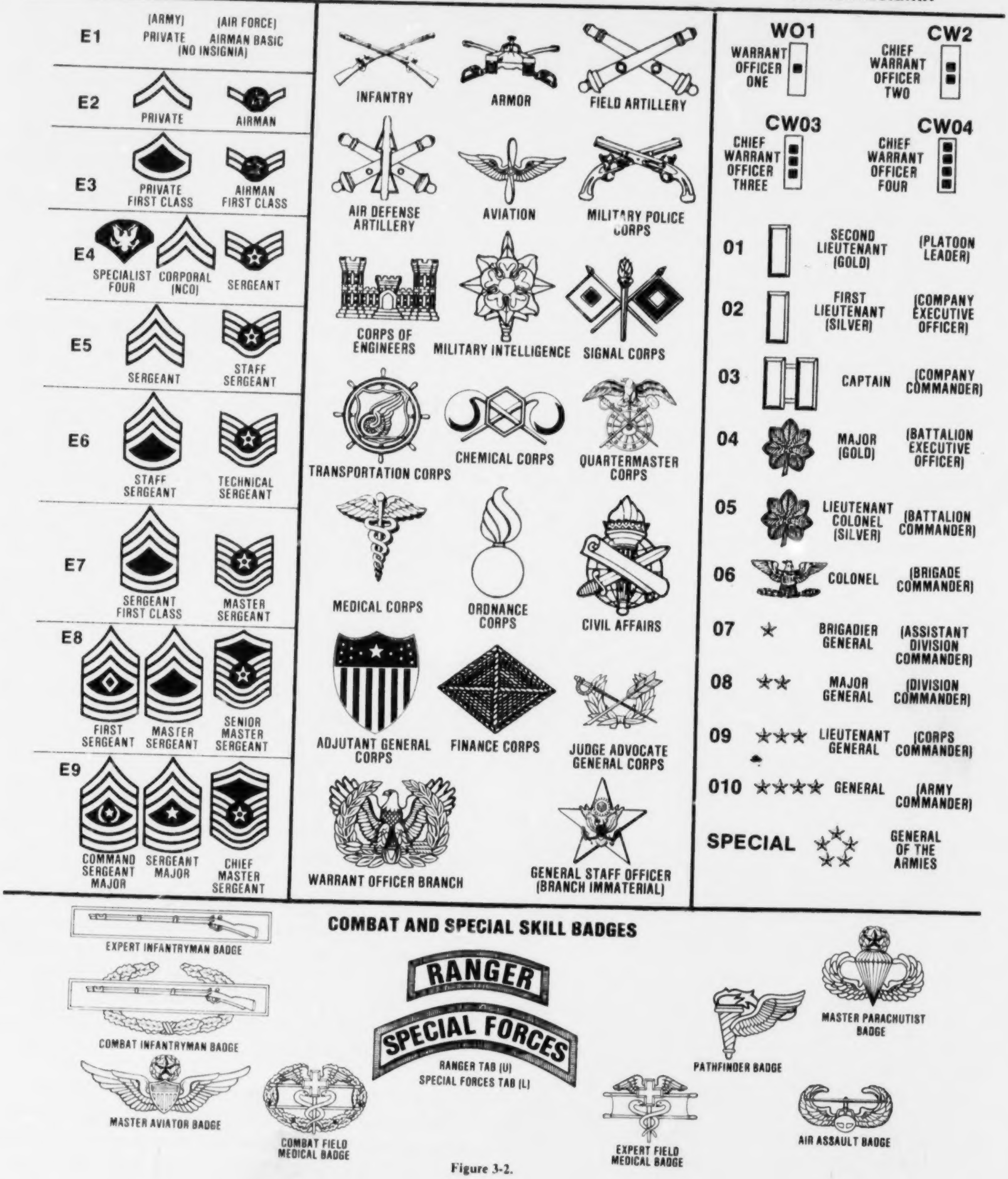

ENLISTED INSIGNIA
BRANCH INSIGNIA
OFFICER INSIGNIA
E1
(ARMY) PRIVATE
(AIR FORCE) AIRMAN BASIC (NO INSIGNIA)
E2
PRIVATE
AIRMAN
E3
PRIVATE FIRST CLASS
AIRMAN FIRST CLASS
E4
SPECIALIST FOUR
CORPORAL (NCO)
SERGEANT
E5
SERGEANT
STAFF SERGEANT
E6
STAFF SERGEANT
TECHNICAL SERGEANT
E7
SERGEANT FIRST CLASS
MASTER SERGEANT
E8
FIRST SERGEANT
MASTER SERGEANT
SENIOR MASTER SERGEANT
E9
COMMAND SERGEANT MAJOR
SERGEANT MAJOR
CHIEF MASTER SERGEANT
INFANTRY
ARMOR
FIELD ARTILLERY
AIR DEFENSE ARTILLERY
AVIATION
MILITARY POLICE CORPS
CORPS OF ENGINEERS
MILITARY INTELLIGENCE
SIGNAL CORPS
TRANSPORTATION CORPS
CHEMICAL CORPS
QUARTERMASTER CORPS
MEDICAL CORPS
ORDNANCE CORPS
CIVIL AFFAIRS
ADJUTANT GENERAL CORPS
FINANCE CORPS
JUDGE ADVOCATE GENERAL CORPS
WARRANT OFFICER BRANCH
GENERAL STAFF OFFICER (BRANCH IMMATERIAL)
WO1
WARRANT OFFICER ONE
CW2
CHIEF WARRANT OFFICER TWO
CW03
CHIEF WARRANT OFFICER THREE
CW04
CHIEF WARRANT OFFICER FOUR
01
SECOND LIEUTENANT (GOLD)
(PLATOON LEADER)
02
FIRST LIEUTENANT (SILVER)
(COMPANY EXECUTIVE OFFICER)
03
CAPTAIN
(COMPANY COMMANDER)
04
MAJOR (GOLD)
(BATTALION EXECUTIVE OFFICER)
05
LIEUTENANT COLONEL (SILVER)
(BATTALION COMMANDER)
06
COLONEL
(BRIGADE COMMANDER)
07
BRIGADIER GENERAL
(ASSISTANT DIVISION COMMANDER)
08
MAJOR GENERAL
(DIVISION COMMANDER)
09
LIEUTENANT GENERAL
(CORPS COMMANDER)
010
GENERAL
(ARMY COMMANDER)
SPECIAL
GENERAL OF THE ARMIES
COMBAT AND SPECIAL SKILL BADGES
EXPERT INFANTRYMAN BADGE
COMBAT INFANTRYMAN BADGE
RANGER
SPECIAL FORCES
RANGER TAB (U)
SPECIAL FORCES TAB (L)
MASTER PARACHUTIST BADGE
PATHFINDER BADGE
MASTER AVIATOR BADGE
COMBAT FIELD MEDICAL BADGE
EXPERT FIELD MEDICAL BADGE
AIR ASSAULT BADGE

Figure 3-2.

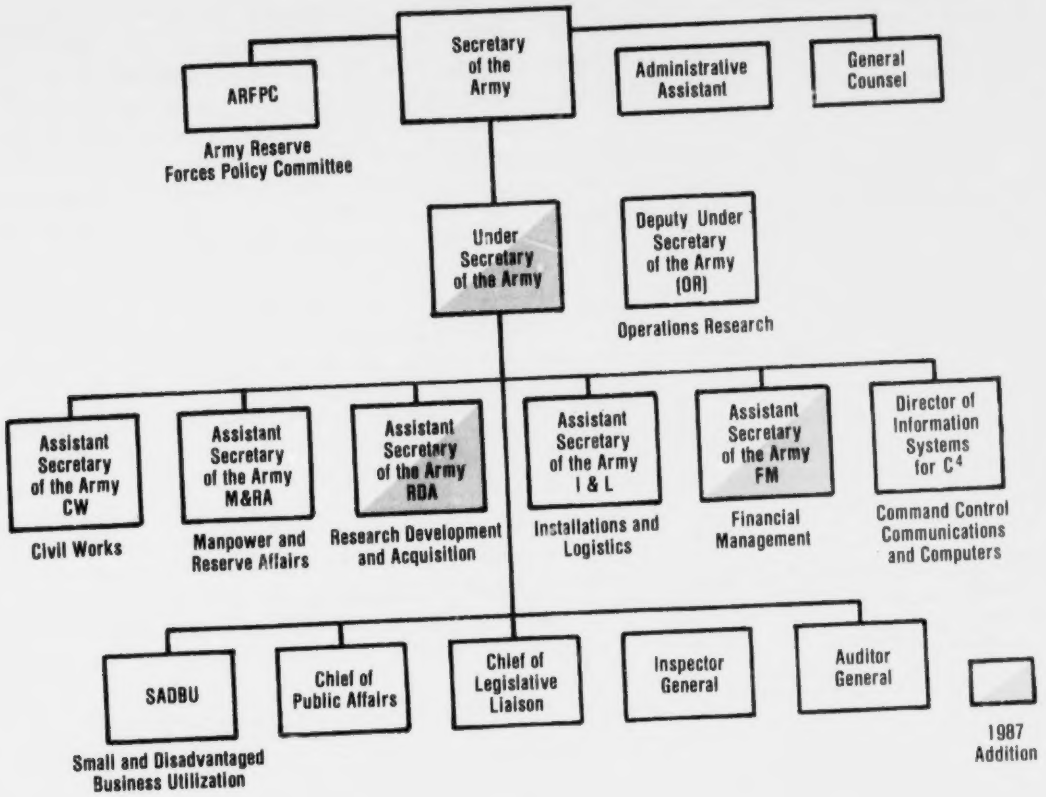

Secretary of the Army
ARFPC
Army Reserve Forces Policy Committee
Administrative Assistant
General Counsel
Under Secretary of the Army
Deputy Under Secretary of the Army (OR)
Operations Research
Assistant Secretary of the Army CW
Civil Works
Assistant Secretary of the Army M&RA
Manpower and Reserve Affairs
Assistant Secretary of the Army RDA
Research Development and Acquisition
Assistant Secretary of the Army I & L
Installations and Logistics
Assistant Secretary of the Army FM
Financial Management
Director of Information Systems for C4
Command Control Communications and Computers
SADBU
Small and Disadvantaged Business Utilization
Chief of Public Affairs
Chief of Legislative Liaison
Inspector General
Auditor General
1987 Addition

Figure 3-3.

tory management, storage and distribution, and maintenance. Also, AMC provides managerial and related service support to US and foreign customers.

Army Intelligence and Security Command (INSCOM) (Arlington Hall Station, Virginia) has the mission (similar to Electronic Security Command and the Air Force Intelligence Service) to provide intelligence and intelligence security support to DA and the field components.

Army Health Services Command (HSC) (Fort Sam Houston, Texas) is responsible for medical and dental support to DA and the field components (a mission similar to Air Force Medical Service Center).

Army Information Systems Command (USAIC) (Fort Huachucca, Arizona) is responsible for communications, air traffic management, and computer support to DA and the field components (a mission similar to the Air Force Communications Command).

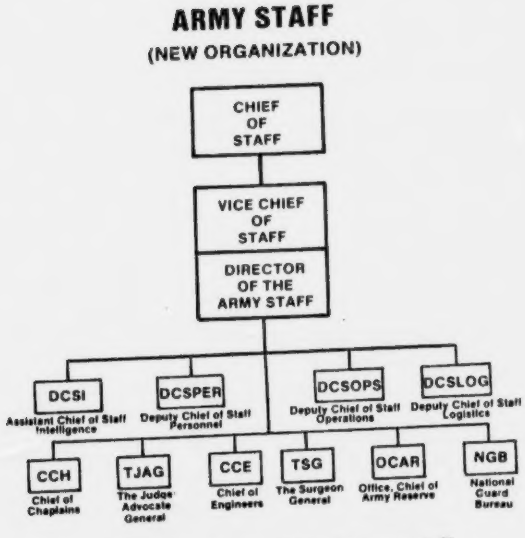

ARMY STAFF
(NEW ORGANIZATION)
CHIEF OF STAFF
VICE CHIEF OF STAFF
DIRECTOR OF THE ARMY STAFF
DCSI
Assistant Chief of Staff Intelligence
DCSPER
Deputy Chief of Staff Personnel
DCSOPS
Deputy Chief of Staff Operations
DCSLOG
Deputy Chief of Staff Logistics
CCH
Chief of Chaplains
TJAG
The Judge Advocate General
CCE
Chief of Engineers
TSG
The Surgeon General
OCAR
Office, Chief of Army Reserve
NGB
National Guard Bureau

Figure 3-4. Headquarters, US Army staff.

Criminal Investigation Command (CIDC) (Falls Church, Virginia) is responsible for criminal, fraud, antiterrorism, internal security, and other special investigations for DA and the field components (a mission similar to the Air Force Office of Special Investigations).

Military Traffic Management Command (MTMC) (Falls Church, Virginia) is responsible for the management of military supply distribution in support of DA and the field components (a mission similar to Military Airlift Command).

United States Army Military District of Washington (MDW) (Fort McNair, Washington, D.C.) has the mission (similar to the Air Force District of Washington) to provide support to DA and the Army activities in the national capital region as well as serving as the executive agent for various joint requirements.

Army components of the unified commands. Unified commands and their designated Army components are shown in the box below.

Combat Organization. The Army units that make up the ground tactical elements of the unified commands range from squad to theater army (fig. 3-5). The structure of these units is flexible, as the commander "task organizes" the elements to meet specified, implied, and essential tasks. Using the factors of METT-T; that is mission, the enemy, the terrain over which operations will be conducted, the troops that are available, and the time available to accomplish the mission (fig. 3-6). Units that are "task organized" will fight as a team, using all the elements drawn together to make up a self-sufficient fighting force. At the completion of the mission the commander may change the "task organization" to meet new and different requirements.

Throughout the following discussion, various infantry units will be used to demonstrate the "task organization" of units. The units depicted are representative of some common combat echelons (from the lowest level to the theater army). The principle that is important to understand is that the commander can put together any of the units—combat, combat support, and combat service support—to fulfill the mission. Basic military symbols, organic to the element, are shown in figure 3-7.

Unified Command	**Army Component**
US European Command (USEUCOM)	US Army Europe (USAREUR) and 7th Army
US Readiness Command (USREDCOM)	US Army Forces, Readiness Command (USARRED)
US Pacific Command (USPACOM)	US Army Western Command (WestCom) and 8th Army US Army Japan
US Central Command (USCENTCOM)	US Army Central Command (ARCENT) and 3rd Army
US Atlantic Command (USLANTCOM)	US Army Forces Command (FORSCOM)
US Southern Command (USSOUTHCOM)	US Army Southern Command (SouthCom)
US Space Command (USSPACOM)	US Army Space Agency
(T)US Special Operations Command (USSOCCOM)	(T)1st Special Operations Command (1SOCOM)
(T)US Transportation Command (USTRANSCOM)	(T)Military Traffic Management Command (MTMC)

(T) Indicates that the formation of the unified command and designation of its Army component is pending final approval.

Air Force	Army	Size (approximate)	Led by:	Military Symbol
	Squad	9	SSG	•
	Platoon	40	LT	•••
Flight	Company	200	CPT	I
Squadron	Battalion	900	LTC	II
Group	Regiment or Group	2,000 - 3,000	COL	III
Wing	Brigade	3,500 - 5,500	COL	X
Air Division	Division	15,000	MG	XX
	Corps	Flexible	LTG	XXX
Numbered Air Force	Army	Flexible	GEN	XXXX

Note: Common Army insignia (rank) and abbreviations are shown at figure 3-2.

Figure 3-5. Comparison of tactical elements.

SAMPLE TASK ORGANIZATION
(USING INFANTRY DIVISION ELEMENTS)

COMBAT ARMS

INFANTRY	(SQUADS)	(PLATOONS)	(COMPANIES)	(BATTALIONS)	(BRIGADES)	(DIVISIONS)
ARMOR			PLATOON	COMPANY	BATTALION	
FIELD ARTILLERY	FORWARD OBSERVER	FIRE SUPPORT TEAM	BATTERY	BATTALION	DIVISION ARTILLERY	CORPS ARTILLERY
AIR DEFENSE ARTILLERY		STINGER TEAM	PLATOON	COMPANY	BATTALION	BRIGADE
AVIATION					BRIGADE	BRIGADE
CAVALRY			(BATTALION SCOUT PLATOON)	TROOP	SQUADRON	REGIMENT

COMBAT SUPPORT

ENGINEER		SQUAD	PLATOON	COMPANY	BATTALION	BRIGADE
MILITARY POLICE			SQUAD	PLATOON	COMPANY	BATTALION
MILITARY INTELLIGENCE			SECTION	COMPANY TEAM	BATTALION	BRIGADE
SIGNAL		(COMPANY SECTION)	(PLATOON)	COMPANY (MINUS)	BATTALION	BRIGADE

COMBAT SERVICE SUPPORT

SUPPORT HEADQUARTERS			(PLATOON)	FORWARD AREA SUPPORT TEAM	DIVISION SUPPORT COMMAND	CORPS SUPPORT COMMAND
MAINTENANCE			(PLATOON)	COMPANY	BATTALION	GROUP
SUPPLY AND TRANSPORTATION		(COMPANY SECTION)	(PLATOON)	COMPANY	BATTALION	GROUP
MEDICAL	MEDIC	SENIOR MEDIC	(PLATOON)	COMPANY	BATTALION	BRIGADE

(ORGANIC TO ELEMENT)

Using the factors of METT-T (mission, enemy, terrain, troops, and time available) the commander organizes the units (combat, combat support, and combat service support) into combat formations. By reading down under an element (squad to corps), a sample task organization is shown. The term company team describes a company-sized element task organized for combat operations. The term task force is used to describe a battalion or larger element that has been task organized for combat.

Figure 3-6. Sample task organization.

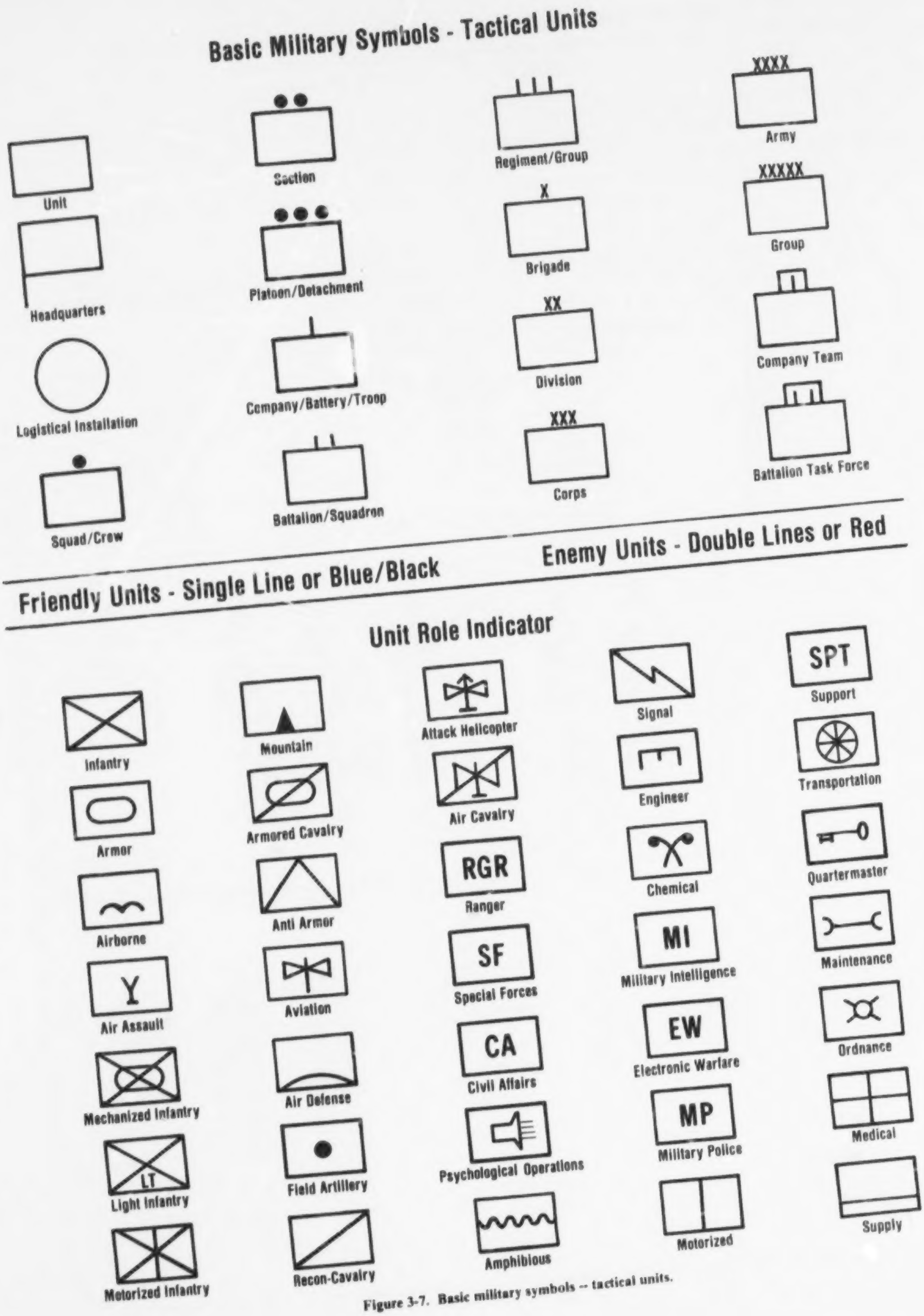

Basic Military Symbols - Tactical Units
Unit
Headquarters
Logistical Installation
Squad/Crew
Section
Platoon/Detachment
Company/Battery/Troop
Battalion/Squadron
Regiment/Group
X
Brigade
XX
Division
XXX
Corps
XXXX
Army
XXXXX
Group
Company Team
Battalion Task Force
Friendly Units - Single Line or Blue/Black
Enemy Units - Double Lines or Red
Unit Role Indicator
Infantry
Armor
Airborne
Air Assault
Mechanized Infantry
LT
Light Infantry
Motorized Infantry
Mountain
Armored Cavalry
Anti Armor
Aviation
Air Defense
Field Artillery
Recon-Cavalry
Attack Helicopter
Air Cavalry
RGR
Ranger
SF
Special Forces
CA
Civil Affairs
Psychological Operations
Amphibious
Signal
Engineer
Chemical
MI
Military Intelligence
EW
Electronic Warfare
MP
Military Police
Motorized
SPT
Support
Transportation
Quartermaster
Maintenance
Ordnance
Medical
Supply

Figure 3-7. Basic military symbols -- tactical units.

The rifle squad. The rifle squad has nine members and is led by a squad leader (fig. 3-8). It fights as two fire teams. Each fire team can fire, maneuver, or overwatch. One fire team has an antiarmor specialist (Dragon gunner). The weapons common to a squad are shown at Appendix B, table 5.

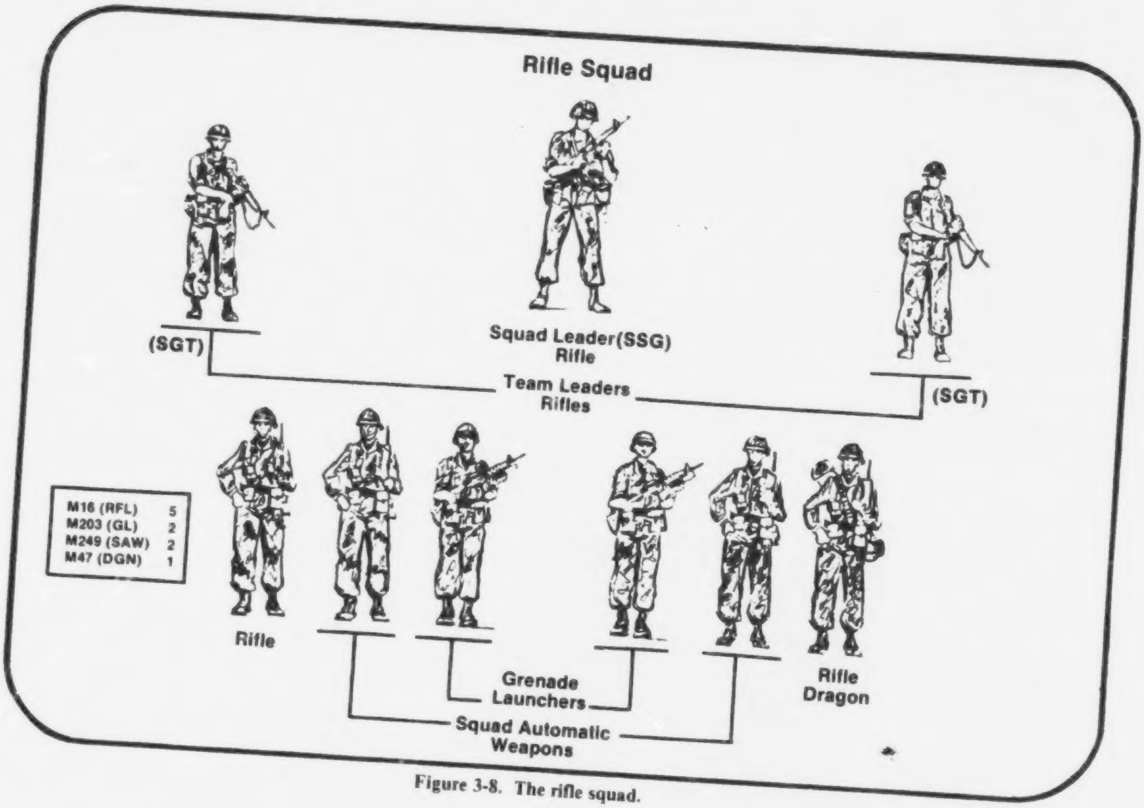

Rifle Squad
(SGT)
Squad Leader(SSG)
Rifle
Team Leaders
Rifles
(SGT)
M16 (RFL) 5
M203 (GL) 2
M249 (SAW) 2
M47 (DGN) 1
Rifle
Grenade
Launchers
Squad Automatic
Weapons
Rifle
Dragon

Figure 3-8. The rifle squad.

The rifle platoon. The rifle platoon has three rifle squads. It has a nine-person headquarters with a platoon leader (Plt Ldr), platoon sergeant (PSG), radiotelephone operator (RATELO), and two machine-gun crews (fig. 3-9). Each machine-gun crew has a gunner (G), an assistant gunner (AG), and an ammunition bearer (AB).

Usually, a field artillery forward observer (FO) and RATELO are with each platoon. The FO helps the platoon leader plan and call for indirect fire. An aidman from the battalion medical platoon normally supports each rifle platoon.

The machine guns and Dragons may be controlled by the platoon leader, platoon sergeant, or squad leaders. The platoon sergeant helps the platoon leader, handles administration and supply, and takes charge in the absence of the platoon leader.

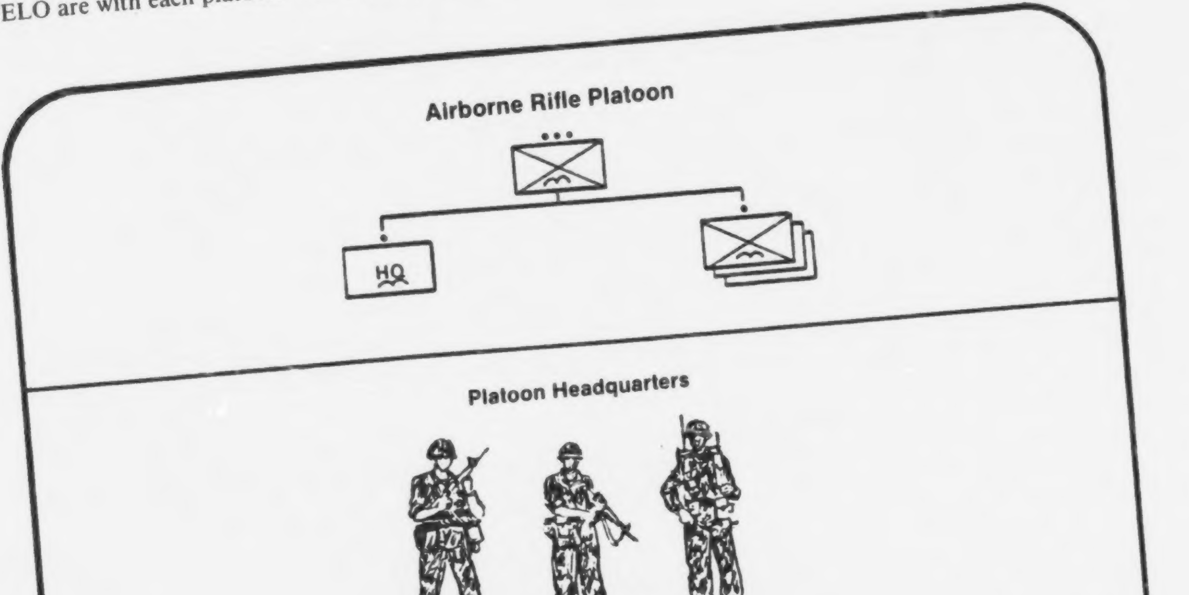
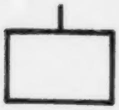

Airborne Rifle Platoon
HQ
Platoon Headquarters
Plt ldr
(LT)
Psg
(E-7)
RATELO
FO
RATELO
Medic
G
AG
AB
Machinegun crew
G
AG
AB
Machinegun crew

Figure 3-9. The rifle platoon.



Company, battery, or troop

Companies / batteries / troops. Company-size units consist of two or more platoons usually of the same type with a headquarters (Co Hq) and, in some cases, a limited capacity for self-support (fig. 3-10). Companies are the basic elements of all battalions. They are also assigned as separate units of brigades and larger organizations.

All close combat companies can fight massed or by separate platoons. In infantry, armor, and attack helicopter battalions, companies usually fight as integral units. Cavalry troops and attack helicopter companies more frequently fight with their platoons in separate zones, sectors, or areas.

Company-size close combat units are capable of fighting without additional reinforcements. Ordinarily, however, companies or troops are augmented for operations with short range in air defense (SHORAD) units and ground surveillance radar teams. They may also be reinforced with maneuver platoons of the same or different types and with engineer squads or platoons to form teams. Company teams are formed to tailor forces for a particular mission. Such tailoring matches forces to missions with greater precision but often disrupts teamwork within the company. Company teams should, therefore, be formed only after careful consideration and should train together before they are committed whenever possible.

Field artillery (FA) batteries are the basic firing units of FA battalions. They are organized with a firing battery, a headquarters, and limited support sections. They may fire and displace together or by platoons. Usually, batteries fight as part of their parent battalion. Occasionally, they are attached to other batteries or FA battalions and, in some cases, they respond directly to a maneuver battalion or company. Multiple launch rocket, Lance, and Pershing batteries will more often operate independently. Armored cavalry squadrons have organic howitzer batteries.

Air defense artillery (ADA) batteries operate as th fighting elements of ADA battalions or, if they ar SHORAD batteries, in direct support of maneuv brigades or battalions. Separate SHORAD batteries exist in separate brigade-size organizations.

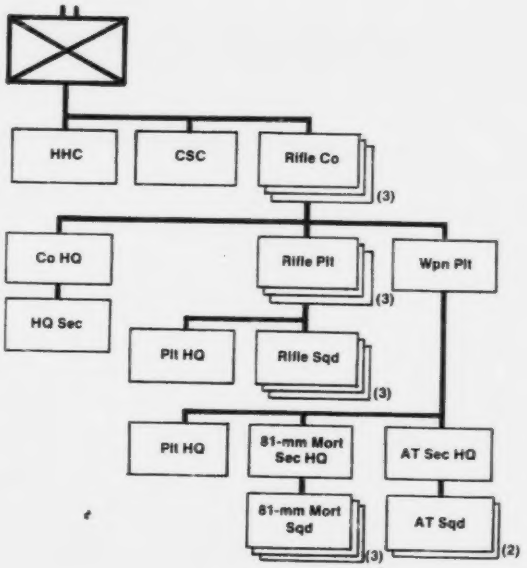


Figure 3-10. Infantry Company.

Combat engineer companies control three or four engineer platoons. They may be employed by their own battalion in a variety of tasks or they may support maneuver brigades or battalions. Separate brigades and regiments usually have an assigned combat engineer company.

Most other combat support and combat service support (CSS) units are formed as companies. Such companies vary widely in size, employment, and assignment.

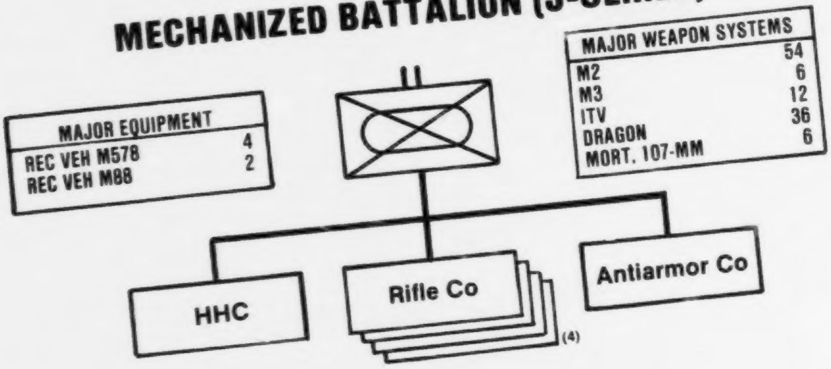
Battalion/squadron

Battalions/squadrons. Battalions and cavalry squadrons consist of two or more company-size units and a headquarters (fig. 3-11). Most battalions are organized by branch, arm, or service and, in addition to their operational companies, contain a headquarters company that gives them the ability to perform some administrative and logistic services. Typically, battalions have three to five companies in addition to their headquarters.

Maneuver battalions can be reinforced with other combat and combat support companies to form task forces for special missions. Field artillery battalions can be reinforced with batteries of any kind to form artillery task forces.

Engineer, ADA, and signal battalions assigned to or supporting divisions routinely operate throughout the division area of operations. Their commanders also perform the additional duties of division special staff officers.

MECHANIZED BATTALION (J-SERIES)



MAJOR WEAPON SYSTEMS

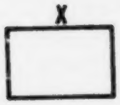
"J" SERIES MECH INF BN (MECH INF/ARMORED DIV)

	TOW	DRAGON	TANK	IFV	CFV	MORTARS (107-mm)
Mech IN Bn	12	36	—	54	7	6
HHC				2		
Sct Plt					7	
Hv Mort Plt						6
Inf Co (X4)		9		13		
AT Co (ITV)	12					

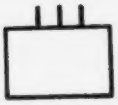
Figure 3-11.

Combat arms battalions perform single tactical missions as part of a brigade's tactical operations. Battalions attack, defend, delay, or move to assume new missions. Air and ground cavalry squadrons also perform reconnaissance and security missions. Field artillery battalions fire in support of any of these missions.

Combat support and CSS battalions vary widely in type and organization. They may be separate divisional or nondivisional battalions, but, in any case, they normally perform functional services for a larger supported unit within that unit's area of operations. All battalions are capable of at least limited, short-term self-defense.



Brigade



Regiment/group

Brigades/regiments/groups. Brigade-size units control two or more battalions. Their capabilities for self-support and independent action vary considerably with the type of brigade.

Maneuver brigades are the major combat units of all types of divisions (fig. 3-12). They can also be organized as separate units. They can employ any combination of maneuver battalions and they are usually supported by FA battalions, aviation units, and by smaller combat, combat support, and CSS units. Although separate brigades and armored cavalry regiments have a fixed organization, division commanders establish the organization of their brigades and change their organization as frequently as necessary.

Brigades combine the efforts of their battalions and companies to fight engagements and to perform major tactical tasks in division battles. Their chief tactical responsibility is synchronizing the plans and actions of their subordinate units to accomplish a single task for the division or corps.

Separate brigades of infantry, armor, FA, ADA, engineer or aviation, and armored cavalry regiments can be used to reinforce corps or divisions and can be shifted from unit to unit to tailor forces for combat. Separate brigades and regiments are usually employed as units when attached to corps or divisions.

Other combat, combat support, and CSS brigades and groups are organized to control nondivisional units for corps and larger units. Engineer, ADA, signal, aviation, military police, and transportation brigades are typical of such units. They may also be the building blocks of such large unit support structures as corps and theater army support commands and of such combat support commands as engineer commands. Divisions are supported by an organic brigade-size support command of mixed CSS battalions and companies.

MECHANIZED DIVISION

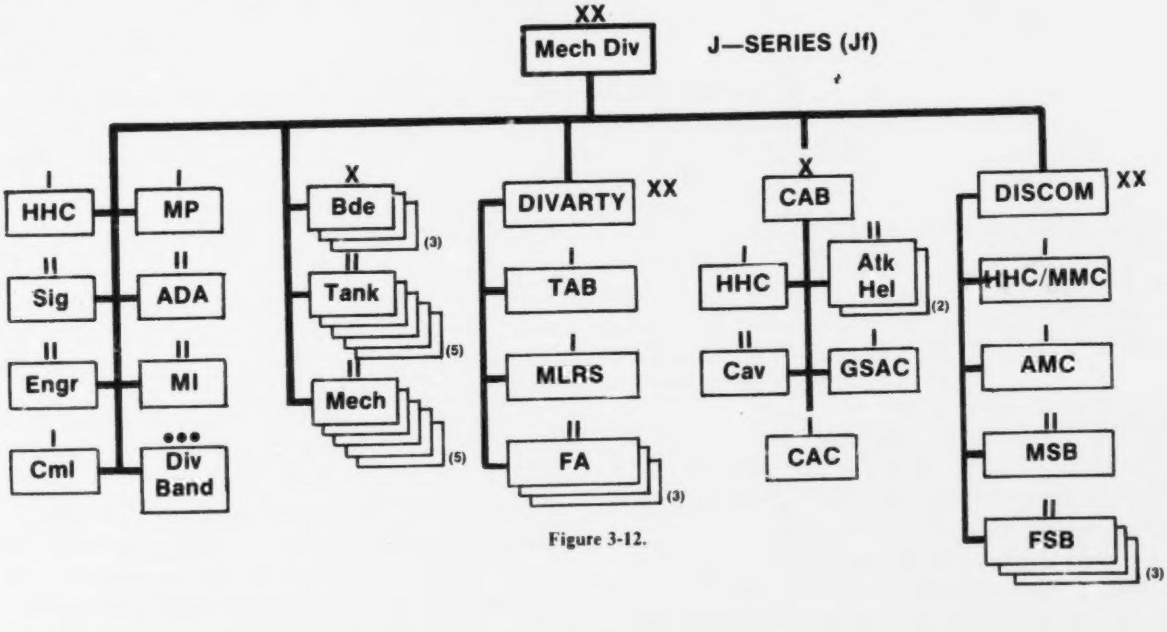
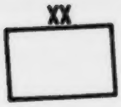
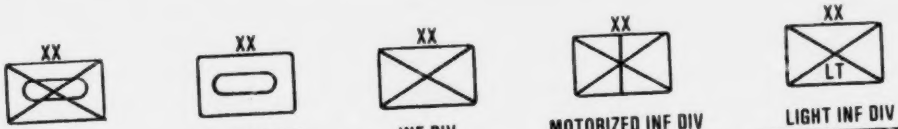


Figure 3-12.



Division

Divisions. Divisions are fixed combined arms organizations of 8 to 11 maneuver battalions, 3 to 4 FA battalions, and other combat, combat support, and CSS units (fig. 3-13). Capable of performing any tactical mission and designed to be largely self-sustaining, divisions are the basic units of maneuver at the tactical level. Infantry, armored, mechanized infantry, airborne, air assault, light assault, and motorized infantry divisions are all presently in the force.



MECH INF DIV	ARMORED DIV	INF DIV	MOTORIZED INF DIV	LIGHT INF DIV
1st INF DIV (M)	1st CAV DIV	2nd INF DIV	9th INF DIV (MTR)	6th INF DIV(L)
3rd INF DIV (M)	1st ARM DIV	26th INF DIV (NG)		7th INF DIV(L)
4th INF DIV (M)	2nd ARM DIV	28th INF DIV (NG)		10th MTN DIV(L)
5th INF DIV (M)	3rd ARM DIV	38th INF DIV (NG)		25th INF DIV(L)
8th INF DIV (M)	49th ARM DIV (NG)	42nd INF DIV (NG)		29th INF DIV (L)(NG)
24th INF DIV (M)	50th ARM DIV (NG)	47th INF DIV (NG)		82nd ABN DIV
35th INF DIV (M)(NG)				101st ABN DIV (AASLT)
40th INF DIV (M)(NG)				

Figure 3-13. Current US Army divisions.

Divisions possess great flexibility. They tailor their own brigades and attached forces for specific combat missions. Their combat support and CSS battalions and separate companies may be attached to or placed in support of brigades for the performance of a particular mission.

Divisons perform major tactical operations for the corps and can conduct sustained battles and engagements. They almost never direct actions at the operational level (campaigns or major operations), but they may be used by corps or field armies to perform tasks of operational importance. These may include exploiting tactical advantages to seize objectives in depth, moving to gain contact with enemy forces, or moving by air to seize positions behind an enemy force.

Refinement of heavier force designs. Army design models provide for an armored division of about 16,800 members (six tank, four mechanized infantry battalions) and a mechanized infantry division of approximately 17,100 (five tank, five mechanized infantry battalions). The design retains the increase from three to four in the number of tank and infantry companies assigned to maneuver battalions. These companies are being equipped with the Abrams tank and Bradley fighting vehicle. The division support command provides a forward support battalion to each brigade and a main support battalion within the division rear area. A long-range surveillance detachment has been placed in the divisional cavalry squadron. Infantry squads and 155-mm howitzer sections have been reduced to nine members each. The 8-inch howitzer batteries have been moved to corps and a battery of multiple launch rocket system (MLRS) has been retained as a divisional general support weapon. During FY 1987 heavy forces in both Europe and the continental United States (CONUS) will continue conversion to the refined unit designs as associated new equipment is fielded and facilities become available. Reserve component affiliation with selected units continues, with roundout units converting to new unit designs about the same time as their associated AC unit.

The modern design for the 2d Infantry Division in Korea was approved in May 1985. The new design considers the unique requirements for this forward deployed division and provides increased firepower through the use of modern equipment while staying within required space authorizations. Additional design changes include two air assault battalions replacing two infantry battalions.

The 9th Infantry Division was tasked to develop innovative tactics and equipment that would evolve for use in a new type division. In September 1985, the Army leadership approved an interim design for a motorized division. This design includes three infantry brigade headquarters, five heavy combined arms battalions, two light combined arms battalions, and two light attack battalions. The division also includes a combat aviation brigade. The division's tactics and equipment emphasize high tactical mobility combined with extensive firepower. However, the division retains strategic mobility more comparable to the light division.

Organization of the lighter forces. Throughout FY 87 the Army will continue the process of creating more deployable, relevant lighter forces. The activation and conversion to five light infantry divisions—four in the AC, one in the ARNG—continue. Both the air assault (101st ABN Division [ASSLT]) and the airborne division (82d ABN Division) will complete conversion in FY 87.

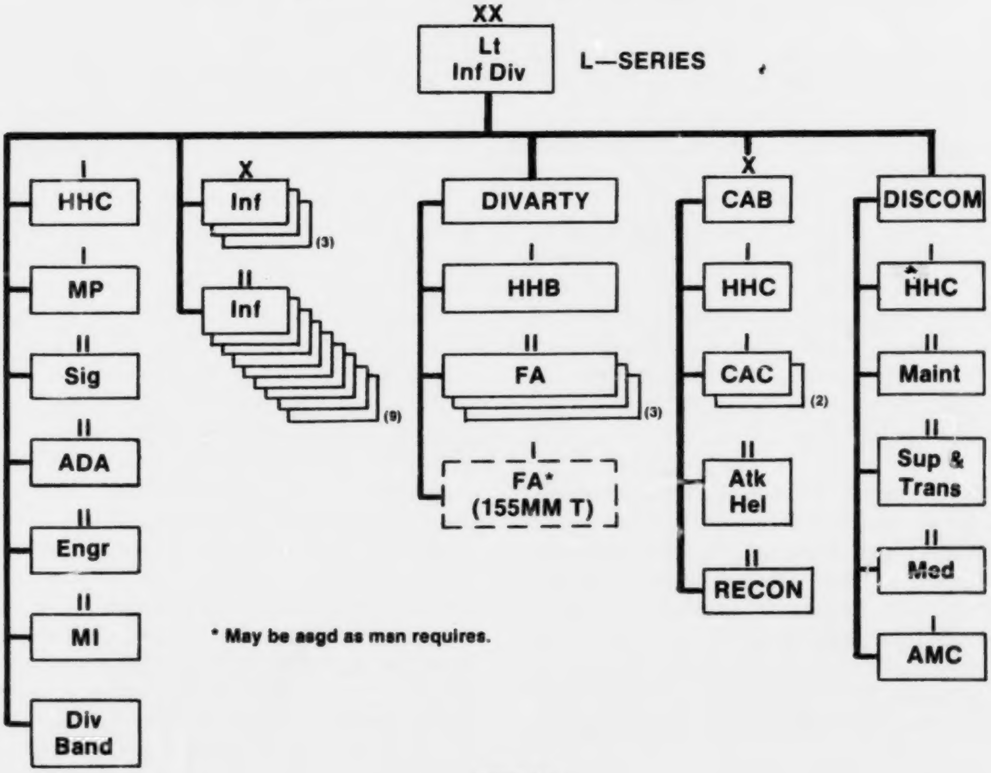
The 7th Infantry Division (Light) completed its conversion to the light infantry design in FY 85, and in FY 86 underwent a year-long certification (see fig. 3-14). The 25th Infantry Division in Hawaii converted to the light infantry design in FY 86. Lessons learned during the conversion of the 7th Infantry Division (Light) are being applied to the other light divisions' conversions.

The 10th Mountain Division (Light Infantry), which was activated as a new division in FY 85, continues its growth. The pace of growth will be determined by the availability of facilities, particularly family housing, at Fort Drum, New York. During FY 86, the 10th continued building its combat structure by activating two infantry brigade headquarters, four infantry battalions and one field artillery battalion. Additions to the combat service support structure begun in FY 85 will continue. One of the division's infantry brigades stationed temporarily at Fort Benning, Georgia, will remain there until adequate facilities are available at Fort Drum in FY 89. The division has the 27th Brigade of the New York Army National Guard as a roundout brigade.

During FY 86, the Army activated an additional light infantry division in the active force and achieved a complete reactivation of another one in the RC. The 6th Infantry Division (Light) was activated in 1986 at Fort Wainwright and Fort Richardson, Alaska. This new division was formed around the existing 172d Infantry Brigade already stationed in Alaska. The 205th Separate Infantry Brigade, US Army Reserve, headquartered in Minnesota, will round out the division. The division's primary mission is the defense of Alaska. The 29th Infantry Division (Light), Army National Guard, is the Army's tenth National Guard division, headquartered at Fort Belvoir, Virginia, and based on assets of the 116th Separate Infantry Brigade (Virginia) and the 58th Separate Infantry Brigade (Maryland), the division completed its reactivation as a light division during FY 86.

In August [illegible]84, the Army approved new force designs for the air assault and airborne divisions. The air assault

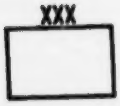
LIGHT INFANTRY DIVISION



* May be asgd as msn requires.

Figure 3-14.

division (101st) began conversion to the new design in FY 86; the airborne division (82d) began to convert to the new design in FY 87. The airborne and air assault division structures are based upon the light infantry division force design. The design was modified to consider unique mission requirements and the need for specialized training. Both divisions will be more readily deployable with increased tactical mobility, and will possess improved reconnaissance capabilities, a broader range of communications assets, and organic nuclear, biological, chemical decontamination capabilities, and smoke support.

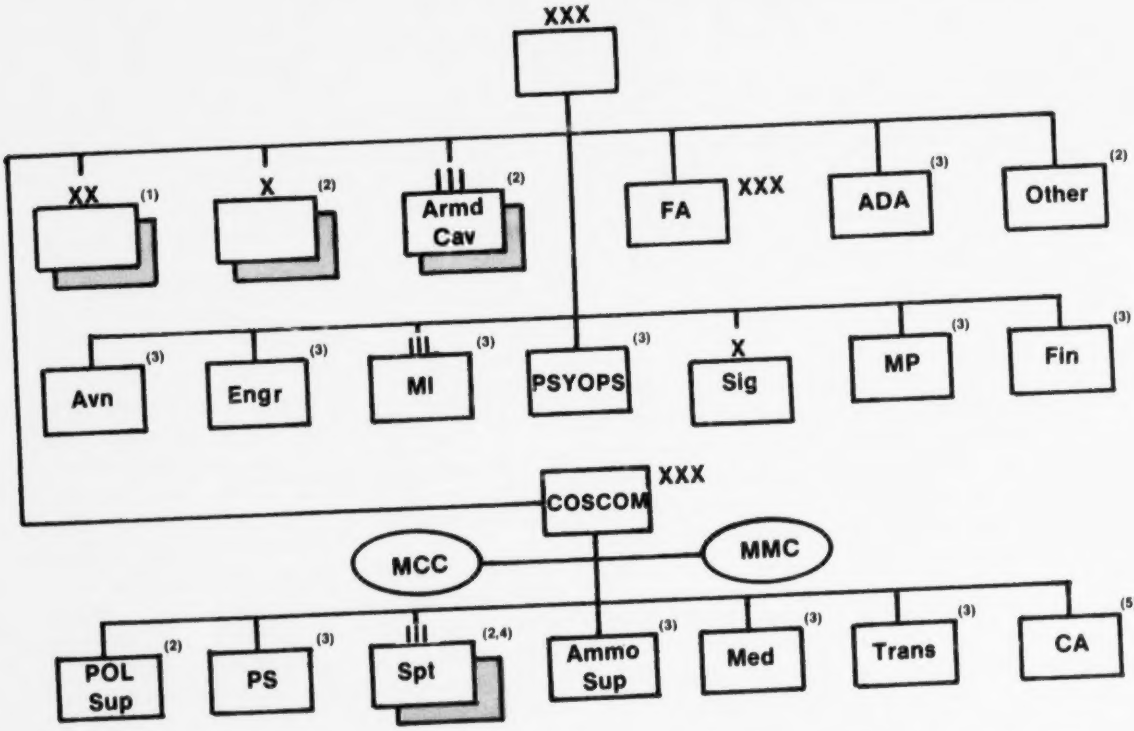


Corps

Corps. Corps are the Army's largest tactical units, the instruments with which higher echelons of command conduct maneuver at the operational level. Corps are tailored for the theater and mission for which they are deployed. Once tailored, however, they contain all the organic combat, combat support, and combat service support capabilities required to sustain operations for a considerable period (fig. 3-15).

Corps plan and conduct major operations and battles. They synchronize tactical activities including the maneuver of their divisions, the fires of their artillery units and supporting aerial forces, and the actions of their combat support and CSS units. Although corps normally fight as part of a larger land force—a field army or army group, they may also be employed alone, either as an independent ground force or as the land component of a joint task force. When employed alone, they may exercise operational as well as tactical responsibilities.

Corps may be assigned divisions of any type required by the theater and the mission. They possess organic support commands and are assigned combat and combat support organizations based on their needs for a specific operation. Armored cavalry regiments, FA brigades,



[1] Two to five.
[2] Numbers and types of units will vary with requirements.
[3] The size of the command and control headquarters will depend on the scope and magnitude of its mission to include the number of subordinate units assigned.
[4] Provides DS supply and maintenance to nondivisional units and GS supply and maintenance in support of the entire corps.
[5] May be assigned to corps headquarters or COSCOM.

Note: When performing combat service support missions, combat support units may be attached to either corps headquarters or COSCOM, depending on mission requirements and other considerations.

Figure 3-15. Typical Army corps.

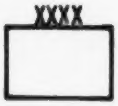
engineer brigades, ADA brigades, and aviation brigades are the nondivisional units commonly available to the corps to weight its main effort and to perform special combat functions. Separate infantry or armor brigades may also be assigned to corps. Signal brigades, military intelligence (MI) groups, and MP groups are the usual combat support organizations present in a corps. Other units such as psychological operations (PSYOP) battalions, special operating forces (SOF), and civil affairs units may be assigned to corps when required.

AirLand Battle doctrine places increased responsibility on the corps commander to integrate the major operations (close, deep, rear) of the battle. The overall structure of the corps is being redesigned to provide the corps commander the assets necessary to fight, control, and sustain simultaneously three separate operations. The proposed revisions of the corps structure are based on the combat capabilities and sustainment requirements of the redesigned divisions and upon prudent assumptions where division and separate brigade designs are not yet complete. The alternative corps designs incorporate the following changes:

- Increase the capability of the corps signal brigade.
- Transfer division Chaparral and add Hawk battalions to the corps air defense artillery brigade.
- Strengthen the corps military police brigade.
- Provide human intelligence capability within the corps.
- Transfer of eight-inch field artillery cannons to the corps, convert cannon artillery battalions to three eight-gun batteries.
- Add a multiple launch rocket system (MLRS) battalion and a target acquisition battalion with remotely piloted vehicles to corps artillery.
- Add attack helicopter battalions to the corps aviation brigade.

Current US Army Corps

I Corps (Ft Lewis, Wash.)(9th Inf Div [MTR]/7th Inf Div [L]/25th Inf Div [L]/6 Inf Div [L])
III Corps (FT Hood, Tex.)(1st Inf Div [M]/5th Inf Div [M]/4th Inf Div [M]/1st Cav Div/2d Arm Div)
V Corps (Frankfurt, FRG)(8th Inf Div [M]/3d Arm Div)
VII Corps (Stuttgart, FRG)(1st Inf Div [M]Fwd/3d Inf Div [M]/1st Arm Div)
IX Corps (Provisional)(US Army Japan)
XVIII Airborne Corps (Ft. Bragg, N.C.)(10th Inf Div [L]/82d ABN Div/24th Inf Div [M]/101st ABN Div [AASLT])



Theater army

Theater army. Theater army is normally the Army service component command in a unified command (fig. 3-16). Third US Army, Eighth US Army, and Seventh US Army (USAREUR) are current examples of theater armies. The theater army as the service component has both operational and support responsibilities. Its exact tasks are assigned by the theater commander in chief (CINC) and may be exclusively operational missions, solely logistic tasks, or a combination of both types of responsibility.

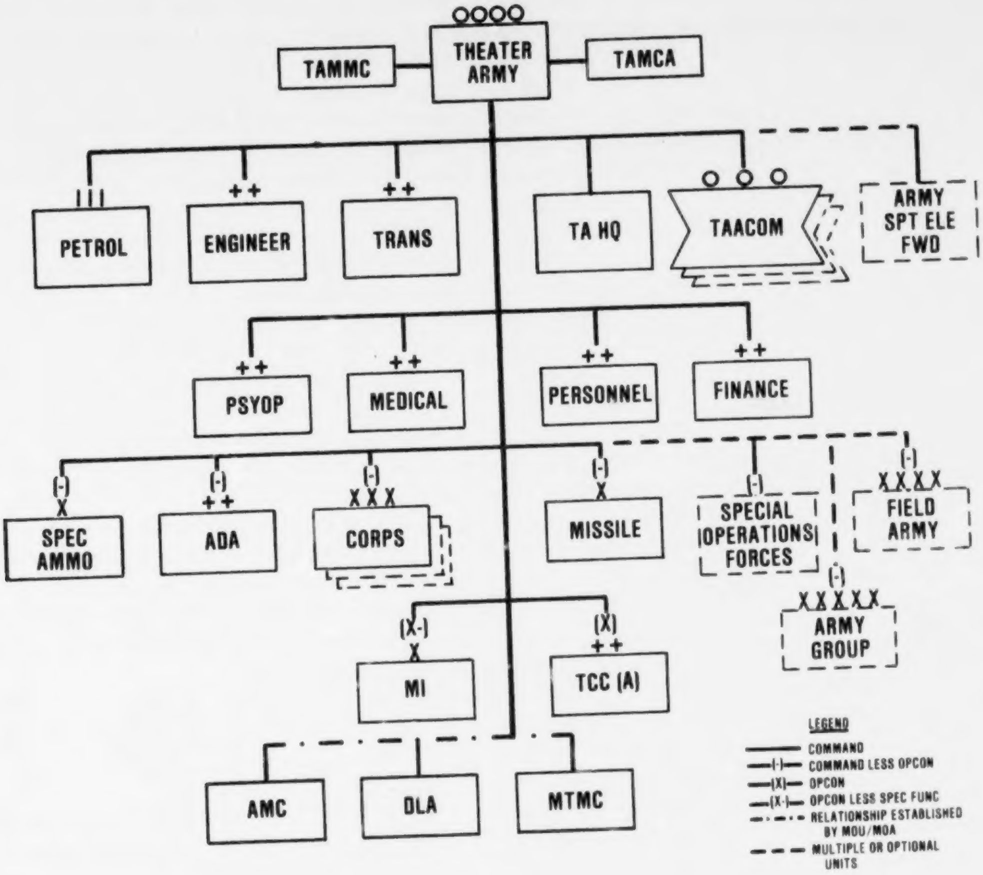
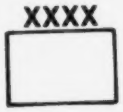

THEATER ARMY
TAMMC
TAMCA
PETROL
ENGINEER
TRANS
TA HQ
TAACOM
ARMY SPT ELE FWD
PSYOP
MEDICAL
PERSONNEL
FINANCE
SPEC AMMO
ADA
CORPS
MISSILE
SPECIAL OPERATIONS FORCES
FIELD ARMY
ARMY GROUP
MI
TCC (A)
AMC
DLA
MTMC
LEGEND
COMMAND
COMMAND LESS OPCON
OPCON
OPCON LESS SPEC FUNC
RELATIONSHIP ESTABLISHED BY MOU/MOA
MULTIPLE OR OPTIONAL UNITS

Figure 3-16. Typical theater army.

Theater army commanders are responsible to the unified commander in a theater for recommending how US Army forces assigned to them should be allocated and employed. Their support responsibilities include the requirements to organize, equip, train, and maintain Army forces in the theater.

The organization of theater armies is not standard. It varies between theaters according to the size of the US Army component in a force and with the factors of mission, enemy, terrain, troops, and time available (METT-T). Other levels of command can also perform theater army functions. For example, a corps staff could perform the theater army function if only a single corps were committed to a contingency area. Or a larger separate staff may be necessary to handle the administrative, legal, logistical, personnel, intelligence, operations, and communications tasks of a large force deployed overseas. Liaison between a theater army and another headquarters employing its forces must be performed whenever theater armies release operational command of their units.

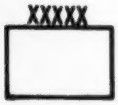


Field army

Field army. Field armies may be formed by theater commanders in coordination with the CINCs of unified command to control and direct the operations of assigned corps. Combined Field Army, Korea, is an example of a field army. Field armies will usually be constituted from existing army assets and structured to meet specific operational requirements. In joint and combined operations, the subordinate units of field armies may include units of other services or of allied forces. When the field army is the largest land formation in a theater of war, its commander may serve as the land component commander (LCC). As such, its commander may design and direct the land campaign for the entire theater.

Field armies exercise major operational responsibilities. When subordinated to an army group, field armies become the primary units of operational maneuver, conducting the decisive operations of the land campaign. When operating independently or as the land component of a joint force, field armies may be charged with planning and conducting the land campaign in a theater of war or a theater of operations. In either case, field army commanders employ subordinate corps to concentrate combat power, to accept or decline battle, and to exploit the outcome of tactical actions.

Field armies and equivalent organizations are primarily operational headquarters. They may establish priorities for CSS among their subordinate forces, but CSS is usually provided by a theater army, service component command, or national support organization. In contingency operations, the field army may assume responsibility for the logistic support of army forces in the field. In such an operation, the field army would require the assignment of support organizations from the theater army or unified command.



Army group

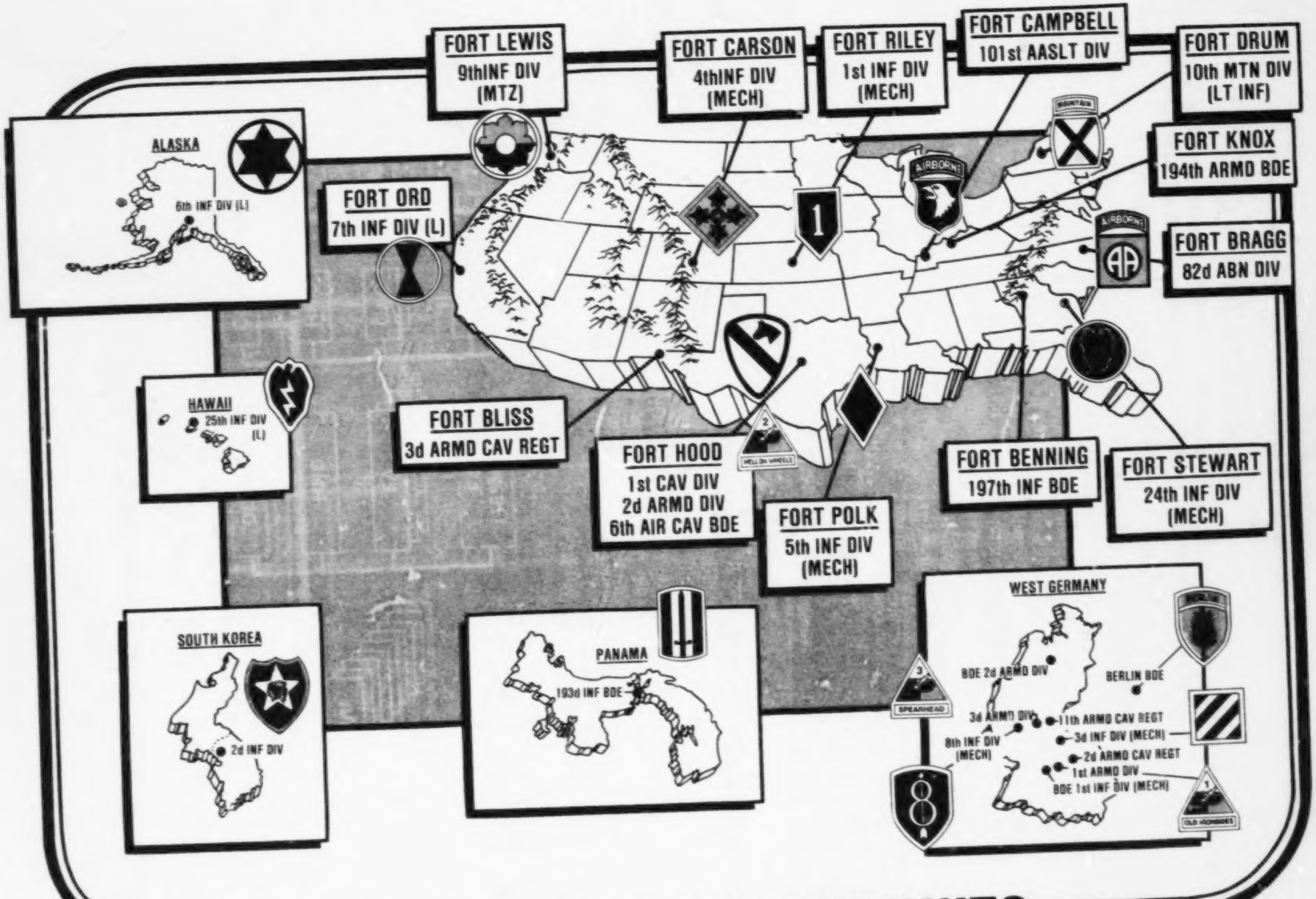
Army group. In a mature theater of war where a large number of forces are employed, theater army commanders, in coordination with the CINCs of unified or combined commands, may form army groups to control the operations of two to five field armies. An example of an army group is Central Army Group of NATO (Central). Army groups have not been employed by the US Army since World War II, but, in a large conflict, they might be necessary again. As in the past, their main function would be to design and direct campaigns in a theater. In some cases, an army group commander might be designated the LCC.

Army group commanders perform major missions for which they usually receive broad operational guidance. They control a variable number of field armies depending on their mission and should also control separate units necessary for their operations. Special operating forces units, PSYOP units, civil affairs organizations, other support forces including engineer, aviation, MI, MP, signal, and CSS units are commonly needed to support the operations of army groups. Army groups also require the full range of air support for their operations.

Like field armies, army groups will be activated from existing army units. They will often be multinational forces and their headquarters will then be staffed by officers of participating allied forces. NATO army groups currently control allied corps due to the absence of national field armies.

Summary

The composition of the army is simple in nature, task organized to accomplish the assigned mission. The different levels of command, from squad to army group, perform complementary tactical and operational functions, although they vary in size, organization, and equipment. Regardless of the mission or level of conflict, a unit that is properly led, task organized, and equipped can meet the challenge to close with the enemy and kill or capture enemy forces by fire and maneuver.


FORT LEWIS
9thINF DIV
(MTZ)
FORT CARSON
4thINF DIV
(MECH)
FORT RILEY
1st INF DIV
(MECH)
FORT CAMPBELL
101st AASLT DIV
FORT DRUM
10th MTN DIV
(LT INF)
FORT KNOX
194th ARMD BDE
FORT BRAGG
82d ABN DIV
FORT ORD
7th INF DIV (L)
ALASKA
6th INF DIV (L)
HAWAII
25th INF DIV
(L)
FORT BLISS
3d ARMD CAV REGT
FORT HOOD
1st CAV DIV
2d ARMD DIV
6th AIR CAV BDE
FORT POLK
5th INF DIV
(MECH)
FORT BENNING
197th INF BDE
FORT STEWART
24th INF DIV
(MECH)
SOUTH KOREA
2d INF DIV
PANAMA
193d INF BDE
WEST GERMANY
BDE 2d ARMD DIV
BERLIN BDE
3d ARMD DIV
11th ARMD CAV REGT
8th INF DIV
(MECH)
3d INF DIV (MECH)
2d ARMD CAV REGT
1st ARMD DIV
BDE 1st INF DIV (MECH)
MOUNTAIN
AIRBORNE
AIRBORNE
AA
1
HELL ON WHEELS
2
SPEARHEAD
3
OLD IRONSIDES
1
8

ACTIVE ARMY COMBAT UNITS

PART TWO -- OPERATIONS

Part Two, using FM 100-5, *Operations* as a base, discusses the operational and tactical art of warfare with a focus on AirLand Battle doctrine.

Chapter 4 The Challenge of Combat
Chapter 5 Fundamentals of AirLand Battle Doctrine
Chapter 6 Combat Operations
Chapter 7 The Environment of Combat
Chapter 8 Offensive Operations
Chapter 9 Defensive and Retrograde Operations
Chapter 10 Sustaining the Battle
Chapter 11 Joint, Combined, and Contingency Operations

MAY 1986

FM 100-5
OPERATIONS

Our strategy is clearly a joint strategy, and our training, our doctrine, and our forces are designed for joint operations...our tactical forces and airlift forces and special operations forces exist to support the AirLand Battle and Maritime Operations.

GENERAL LARRY D. WELCH
Chief of Staff of the Air Force

HEADQUARTERS,
DEPARTMENT OF THE ARMY

CHAPTER 4

The Challenge of Combat

The overriding mission of US forces is to deter war. The US Army supports that mission by providing combat-ready units to the unified and specified commands. These units are charged with executing the military policies of the United States and waging war should deterrence fail.

All military operations pursue and are governed by political objectives. Today, the translation of success in battle to desired political outcomes is more complicated than ever before.

Despite this complexity, the ability of Army units to fight in high-, mid-, and low-intensity conflicts in concert with other services and with allies remains critical to the nation's survival. Success in battle may not alone assure the achievement of national security goals, but defeat will guarantee failure.

Identifying the Challenges

Army forces must meet worldwide strategic challenges against the full range of threats from terrorism through low- and mid-intensity operations to high-intensity and nuclear operations. In areas of greatest strategic concern, they must be prepared to fight battles of unprecedented scope and intensity.

The skill and courage of leaders at all levels will be critical to success in operations across the spectrum of conflict. As in the past, the chaos of combat will place a premium on the initiative, spirit, cohesion, and mental and physical preparedness of soldiers and their units. Though the importance of winning the first battle is not diminished, the ability to fight sustained campaigns is also vital to deterrence and to victory. Rigorous, realistic training for war must therefore go on continuously to assure Army units' readiness to fight short-notice wars, campaigns, and battles.

The nature of modern battle and the broad geographical range of US interests make it imperative that Army units fight as part of a joint team with units of the US Air Force, the US Navy, the US Marine Corps, and representatives of appropriate civilian agencies. It is also critical that commanders prepare themselves to fight in coalition warfare alongside the forces of our nation's allies. As it has been throughout the twentieth century, teamwork in joint and combined operations will be an essential ingredient in any battles Army forces fight.

Operations in the foreseeable future will be fought in one of two basic environments. One environment may be an anticipated theater of war with an existing support structure of communications, air defense, logistic facilities, and ports. The other may be a relatively immature theater where Army leaders within a joint or combined context will have to choose between creating such a support base in the theater or fighting with only external support.

High- and Mid-Intensity Conflict

The high- and mid-intensity battlefields are likely to be chaotic, intense, and highly destructive. They will probably extend across a wider space of air, land, and sea than previously experienced.

Nonlinear Operations. In high- or mid-intensity conflicts, Army forces must prepare to fight campaigns of considerable movement, not only to reduce vulnerability, but also to obtain positional advantage over the enemy. Rapid movement will be complemented by the use of advanced highly lethal weapons throughout the battle area.

Even in conventional combat, operations will rarely maintain a linear character. The speed with which today's forces can concentrate and the high volumes of supporting fires they can bring to bear will make the intermingling of opposing forces nearly inevitable. Similarly, from the first hours of battle, deep reconnaissance, air mobility, long-range fires, and special operating forces (SOF) will blur the distinction between front and rear and will impose a requirement for all-around defense and self-sufficiency on all units. Successful attack will require isolation of the battle area in great depth as well as the defeat of enemy forces in deeply echeloned defensive areas. Successful defense will require early detection of attacking forces, prompt massing of fires, interdiction of follow-on forces, and the containment and defeat of large formations by fire and maneuver. Throughout the battle area, attack and defense will often take place simultaneously as each combatant attempts to mass, economize locally, and maneuver against the opponent.

Fluidity will also characterize operations in the rear of forward-deployed committed forces. Guerrillas, SOF, and terrorists will seek to avoid set-piece battles and to strike at scattered points of vulnerability. Defending forces will try to preempt such attacks with sweeps and raids throughout the battle area and will mass rapidly in response to guerrilla, SOF, or terrorist attacks wherever they occur.

Lethal Systems. Potential enemies of the United States can be expected to field large quantities of high-quality weapon systems whose range and lethality equal or exceed our own. Potent ground and air systems, complemented by closely coordinated precision guided munitions, will be able to concentrate enormous combat power, especially at decisive points.

Sensors and Communications. Wide-ranging surveillance, target acquisition sensors, and communications that provide information almost immediately will increase the range and scope of battle. Sensors offer the commander more than just timely information on deep enemy locations and activity. They also serve as the basis for attacking enemy follow-on forces with missiles (air-to-surface missile [ASM] and surface-to-surface missile [SSM]), multiple launch rocket system (MLRS), tube artillery, fixed-wing aircraft, attack helicopters, and SOF. Such nonlethal means as electronic combat and deception may be used also. Since these attacks can be of vital importance in battle, the sensors and communications means that make them possible are particularly valuable.

Nuclear Warfare. Even though the primary purpose of nuclear weapons is to deter their use by others, the threat of nuclear escalation pervades any military operation involving the armies of nuclear powers, imposing limitations on the scope and objectives even of conventional operations. United States' nuclear weapons may of course only be used following specific directives by the national command authorities (NCA) after appropriate consultation with allies. Even were such authority granted, however, the employment of nuclear weapons would be guided more by political and strategic objectives than by the tactical effect a particular authorized employment might produce.

Chemical Warfare. Chemical warfare has been practiced sporadically thoughout this century, and US forces maintain a capability in this area primarily for deterrence. Chemical warfare presents many of the same complications as nuclear operations. However, because chemical weapons are more widespread and the inhibition against their use is lower for some nations, US forces are even more likely to face a chemical than a nuclear threat.

Biological Warfare. The United States has renounced the use of biological weapons. However, this unilateral renunciation does not free our own forces from the threat of enemy biological warfare. Army forces must therefore continue to train to fight an enemy who could use biological weapons.

Command and Control. The more fluid the battlefield, the more important and difficult it will be to identify decisive points and to focus combat power there. Under such conditions, it is imperative that the overall commander's intent and concept of operations be understood throughout the force. Communications will be interrupted by enemy action at critical times and units will frequently have to fight while out of contact with higher headquarters and adjacent units. Subordinate leaders will be expected to act on their own initiative within the framework of the commander's intent.

Air Dimension. The airspace of a theater is as important a dimension of ground operations as the terrain itself. This airspace is used for various purposes including maneuver, delivery of fires, reconnaissance and surveillance, transportation, and command and control. The control and use of the air will always affect operations; the effectiveness of air operations in fact can decide the outcome of campaigns and battles. Commanders must consider the airspace to include the apportionment of air power in planning and supporting their operations. They must protect their own forces from observation, attack, and interdiction by the enemy and expect the enemy to contest use of the airspace.

Austere Support. Army forces must be prepared to fight their battles at the end of long, vulnerable lines of logistical support and must anticipate high consumption rates for all types of supplies. They may have to fight outnumbered against an enemy with significantly shorter supply lines. Logistical support may be austere in such situations and thereby markedly affect the design of campaigns and the planning and conduct of battles.

Urban Combat. Combat in built-up areas will be unavoidable in most theaters of war. Divisions and larger units will have to plan for attack and defense in urban areas and for fluid battles around them.

Obstacles. Mid- to high-intensity operations also will have to contend with substantial obstacles. Some are man-made, such as minefields and others are natural such as rivers, mountains, and hindering terrain. Such obstacles often favor the defense and permit economies of force, but they also pose special challenges of force composition, task organization, maneuver, and timing.

Unconventional Warfare and Terrorism. In almost all conflicts, the Army will encounter terrorists, guerrillas, and saboteurs. Operating throughout the theater of war, they will threaten the security and continuity of our operations. They will usually be present even in high- and mid-intensity conflicts where their suppression will involve passive and active measures including the committment of forces.

Low-Intensity Conflict

The growing incidence of war at the low end of the conflict spectrum demands Army action on the unique battlefields of low-intensity conflict (LIC). This form of warfare falls below the level of high- and mid-intensity operations and will pit Army forces against irregular or unconventional forces, enemy special operations forces, and terrorists. Low-intensity conflict poses a threat to US interests at all times, not just in periods of active hostilities.

Fighting in the low end of the conflict spectrum requires special force composition and task organization, rapid deployment, and restraint in the execution of military operation. Army actions in LIC must be fully coordinated with national strategy and fused at the operational level into a coherent effort that will usually include economic and political actions as well as military activities.

In countering an insurgency, the Army may employ specially trained forces or training teams. This sort of activity, termed *foreign internal defense*, may include the transfer of defense equipment, the training of foreign soldiers, advisory assistance, or even the commitment of combat forces. All military efforts in a counterinsurgency campaign will be made in concert with the initiatives of other US government agencies involved to ensure a synchronized national effort. The forces selected for foreign internal defense will depend on the threat to be countered.

There are also peacetime contingency operations that require the employment of Army forces. These can include demonstrations of force, raids, or rescue missions, and larger operations undertaken to protect US interests, lives, and property. These contingency operations require intensive intelligence collection, thorough planning, and rapid deployment of light forces at the decisive time and place.

As in the past, the Army will also participate in peacekeeping operations that support diplomatic efforts to achieve, restore, or maintain peace in an area of armed conflict. Such operations may be unilaterally or internationally staffed and directed. Whatever the case, they will be sensitive and will require a high degree of unit and individual discipline in the forces committed. Units of peacekeeping forces use force only in cases of self defense.

Independent and state-supported terrorists employ violence in attempting to influence the policies of governments. In a very real sense, terrorists pursue strategic objectives through LIC. Army doctrine calls for preventive action–antiterrorism–along with reactive measures–counterterrorism–to meet the terrorist threat to US forces, representatives, and agencies and to the security of American citizens and property.

Terrorism constitutes a threat that must be dealt with within the Army's daily operations and that will continue to be of concern in high- and mid-intensity conflicts. Awareness of the threat and recognition that the indicators of terrorist activity differ from those of the enemy on the conventional battlefield are essential to countering terrorism. Leaders at all levels must develop a broad view of this conflict that will guide them in securing their operations and in protecting their soldiers from terrorists as well as from conventional enemy military forces.

Meeting the Challenges

The US Army can meet these challenges. Superior performance in combat depends on three essential components. First and foremost, it depends on superb soldiers and leaders with character and determination who will win because they simply will not accept losing. Next, it depends on a sound, well-understood doctrine for fighting. Finally, it depends on weapons and supporting equipment sufficient for the task at hand. These three components must be unified harmoniously into effective fighting organizations. This is done through well-thought-out organizational design and effective training programs.

Leadership and Soldiers. Wars are fought and won by people, not by machines. The human dimension of war will be decisive in the campaigns and battles of the future just as it has been in the past.

The fluid, compartmented nature of war will place a premium on sound leadership, competent and courageous soldiers, and cohesive, well-trained units. The conditions of combat on the next battlefield will be unforgiving of errors and will demand great skill, imagination, and flexibility of leaders. As in the wars of the past, however, American soldiers will fight resolutely when they know and respect their leaders and believe that they are part of a good unit. How to develop effective leaders is addressed in FM 22-100, *Military Leadership*.

Doctrine. An army's fundamental doctrine is the condensed expression of its approach to fighting campaigns, major operations, battles, and engagements. Tactics, techniques, procedures, organizations, support structure, equipment and training must all derive from it. It must be rooted in time-tested theories and principles, yet forward looking and adaptable to changing technologies, threats, and missions. It must be definitive enough to guide operations, yet versatile enough to accommodate a wide variety of worldwide situations. Finally, to be useful, doctrine must be uniformly known and understood.

Recent studies have been used to gain insight into the likely nature of contemporary operations. Although AirLand Battle doctrine focuses primarily on mid- to high-intensity warfare, the tenets of AirLand Battle apply equally to the military operations characteristic of low-intensity war. Such operations of course pose a different challenge than those of high- and mid-intensity conflict. That challenge must be met with initiative in leaders, special preparation in training, and flexibility and restraint in operations. FM 100-20, *Low-Intensity Conflict*, addresses this subject in detail.

Training and readiness. Clausewitz stated the purpose of peacetime armies very clearly. He said: "The whole of military activity must relate directly or indirectly to the engagement. The end for which a soldier is recruited, clothed, armed, and trained, the whole object of his sleeping, eating, drinking, and marching is simply that he should fight at the right place and the right time."

Forward-deployed forces may have to fight on a few hours' notice. Other components of the force may have only days or weeks to make final preparations for war. Commanders must have effective plans for those important days or weeks and must train for the specific missions they anticipate. They must ensure that each officer, noncommissioned officer (NCO), and soldier is prepared for battle and is equipped to perform his or her job as part of the unit.

Training is the cornerstone of success. It is a full-time job for commanders in peacetime, and it continues in wartime combat zones as well. On the day of battle, soldiers and units will fight as well or as poorly as they were trained in preceding days.

Force Readiness. A continuing capability to fulfill the Army's mission demands readiness. Readiness includes factors of mobility, flexibility, and staying power.

Mobility. Mobility implies readiness to move rapidly to the scene of action and to anticipate the requirement for forward deployment in critical areas, as well as the capability to move tactically on the battlefield. The tactical dimension of mobility requires that weapons, their carriers or platforms, personnel, supporting munitions, and materiel be capable of rapid and responsive movement. This movement must be performed under any conditions of visibility and weather, over any type of terrain, on or above the surface of the earth, to apply force on the enemy at decisive times and places and to avoid, confuse, or counter the enemy's efforts.

Flexibility. When the United States and its allies are faced with aggression, or the threat of aggression, the nation must be able to call on its military establishment for forces suited in type and degree to appropriate levels of conflict. The Army must be able to operate effectively with a wide variety of weapons, organizations, and tactics so that decisions on the use of forces may be based on broad national and allied interests and values rather than limited by the force structure. Flexibility also requires that, with some exceptions, no major unit be limited by organization, training, or equipment to operations in a specfic area or under special conditions. The division, the basic tactical maneuver unit, is a combined arms integrated maneuver element of a fighting corps. For reasons of flexibility, the Army consists of a mix of heavy and light divisions and separate brigades. Support forces at echelons above division are tailored to meet the peculiar requirements of specific division missions and areas of conflict. Proper task organization of all elements within divisions, and concentration of the full range of capabilites at echelons above division are essential to maintaining requisite flexibility for worldwide contingencies.

Staying power. Commanders must anticipate severe personnel and equipment casualties, restricted mobility, constrained logistic resupply capabilities, and reduced reaction times. The side that can best sustain combat operations and retain its combat effectiveness is likely to win. Throughout the conflict, combat engagements will often be quick, intense, destructive, and decisive. Therefore, the Army's concept of sustained land combat embraces:

1. Development of modern and properly balanced combat, combat support, and combat service support forces that will give us the greatest opportunity for victory. These forces must be able to conduct joint and combined combat operations over extended frontages for lengthy periods of time without significant initial reinforcement other than by tactical air forces.
2. Maintenance of a strong continental base to support these forces.
3. Readiness for timely response to any mission—from land warfare by forward-deployed forces to selective contingency operations in a jungle or desert environment, from armored and mechanized infantry combat to special operations and amphibious or airborne assaults.

Summary

Today's battlefield challenges range from terrorism through high-intensity conflict. Low-intensity operational challenges include response to insurgencies, worldwide contingency operations, politically mandated peacekeeping operations, and antiterrorist operations. Mid- to high-intensity challenges include operations in a nuclear, biological, chemical environment, a nonlinear battlefield, and increased battlefield information with simultaneous difficulties in command and control systems. These challenges will also include operations with constrained logistics, new and more dangerous weapon systems, and significant air operations. To meet these challenges, the modern warrior must prepare by studying the latest doctrine, by providing the highest levels of leadership, and by preparing for combat by demanding the highest standards of training readiness.

Fundamentals of AirLand Battle Doctrine

The US Army's basic fighting doctrine is called AirLand Battle. It reflects the structure of modern warfare, the dynamics of combat power, and the application of the classical principles of war to contemporary battlefield requirements. It is called AirLand Battle in recognition of the inherently three-dimensional nature of modern warfare. All ground actions above the level of the smallest engagements will be strongly affected by the supporting air operations of one or both combatants.

Structure of Modern Warfare

War is a national undertaking that must be coordinated from the highest levels of policymaking to the basic levels of execution. Military strategy, operational art, and tactics are the broad divisions of activity in preparing for and conducting war. Successful strategy achieves national and alliance political aims at the lowest possible cost in lives and treasure. Operational art translates those aims into effective military operations and campaigns. Sound tactics win the battles and engagements that produce successful campaigns and operations. Although the principles of war apply equally to strategy, operational art, and tactics, they apply differently to each level of war.

Strategy. Military strategy is the art and science of employing the armed forces of a nation or alliance to secure policy objectives by the application or threat of force. Military strategy sets the fundamental conditions of operations in war or to deter war. It establishes goals in theaters of war and theaters of operations. It assigns forces, provides assets, and imposes conditions on the use of force. Although its formulation is beyond the scope of this text, strategy derived from policy must be clearly understood to be the sole authoritative basis of all operations.

Operational Art. Operational art is the employment of military forces to attain strategic goals in a theater of war or theater of operations through the design, organization, and conduct of campaigns and major operations. A campaign is a series of joint actions designed to attain a strategic objective in a theater of war. Simultaneous campaigns may take place when the theater of war contains more than one theater of operations. Sequential campaigns in a single theater occur when a large force changes or secures its original goal or when the conditions of the conflict change. A major operation comprises the coordinated actions of large forces in a single phase of a campaign or in a critical battle. Major operations decide the course of campaigns.

Operational art thus involves fundamental decisions about when and where to fight and whether to accept or decline battle. Its essence is the identification of the enemy's operational center of gravity—source of strength or balance—and the concentration of superior combat power against that point to achieve a decisive success. No particular echelon of command is solely or uniquely concerned with operational art, but theater commanders and their chief subordinates usually plan and direct campaigns. Army groups and armies normally design the major ground operations of a campaign. And corps and divisions usually execute those major ground operations. Operational art requires broad vision, the ability to anticipate, a careful understanding of the relationship of means to ends, and effective joint and combined cooperation. Reduced to its essentials, operational art requires the commander to answer three questions:

1. What military conditions must be produced in the theater of war or operations to achieve the strategic goal?

2. What sequence of actions is most likely to produce that condition?

3. How should the resources of the force be applied to accomplish that sequence of actions?

Tactics. Although operational art sets the objectives and pattern of military activities, tactics is the art by which corps and smaller unit commanders translate potential combat power into victorious battles and engagements. Engagements are small conflicts between opposed maneuver forces. Covering forces, guard forces, patrols, units in defense, and units moving to contact fight engagements when they encounter the enemy. Engagements are usually conflicts of a few hours' duration fought between divisions and smaller forces. Such engagements may or may not bring on battle.

Battles consist of a series of related engagements. Battles last longer, involve larger forces, and often produce decisions that affect the subsequent course of the campaign. Battles occur when large forces—divisions, corps, and armies—commit themselves to fight for significant goals. They are often fought when the deliberate attack of one force meets determined resistance from the defender. Battles can also result from meeting engagements between forces contesting the initiative. These battles may result from the determination of opposed commanders to impose their will on their enemy. Battles can also arise without strong direction when large forces meet and neither withdraws. Such actions may not even be recognized as battles until they have gone on for some time.

Battles may not take place at all if the enemy can be rapidly overwhelmed in a series of minor engagements and prevented from mounting a coherent defense. On the other hand, battles can also produce stalemates that favor neither side. Battles or significant tactical gains made without battle determine the course of campaigns.

Sound tactics win battles and engagements by moving forces on the battlefield to gain positional advantage over the enemy; by applying fire support to facilitate and exploit that advantage; and by assuring the sustainment of friendly forces before, during, and after engagement with the enemy. Sound tactics employ all available combat, combat support, and combat service support where they will make the greatest contribution to victory.

Dynamics of Combat Power

The dynamics of combat power decide the outcome of campaigns, major operations, battles, and engagements. Combat power is the ability to fight. It measures the effect created by combining maneuver, firepower, protection, and leadership in combat actions against an enemy in war. Leaders combine maneuver, firepower, and protection capabilities available to them in countless combinations appropriate to the situation. They also attempt to interfere with the enemy leader's ability to generate the greatest effect against them by interfering with the enemy's ability to effectively maneuver, apply firepower, or provide protection. Quantitative measures of available capability are important. However, the quality of available capabilities, the ability of the leader to bring them to bear, and the ability of the leader to avoid the enemy's efforts to degrade these capabilities before or during battle may be equally or more important. This explains why the larger or stronger force does not always win.

In the course of campaigns, major operations, battles, and engagements, the balance of combat power may shift back and forth between opponents. This is especially likely when engaged forces are roughly equal in capabilities. When physical strengths are nearly equal, the moral qualities of skill, courage, character, perseverance, innovativeness, and strength of will of both soldiers and leaders are always decisive. There are also many cases in history where forces inferior in physical quantitative or qualitative measures but superior in moral qualities achieved success. In such cases, the skill of leaders in using the environment to advantage, applying sound tactical or operational methods, and providing purpose, direction, and motivation to their soldiers and subordinate leaders was always crucial.

At both the operational and tactical levels, the generation of combat power requires the conversion of the potential of forces, resources, and tactical opportunity into actual capability. This is done through violent and coordinated action concentrated at the decisive time and place. Superior combat power is generated through a commander's skillful combination of the elements of maneuver, firepower, protection, and leadership in a sound plan flexibly but forcefully executed.

Maneuver. Maneuver is the movement of forces in relation to the enemy to secure or retain positional advantage. It is the dynamic element of combat—the means of concentrating forces at the critical point to achieve the surprise, psychological shock, physical momentum, and moral dominance that enable smaller forces to defeat larger ones. The effects of maneuver may also be achieved without movement by allowing the enemy to move into a disadvantageous position, as in an ambush or with stay-behind forces. In either case, maneuver will rarely be possible without firepower and protection. Operational maneuver requires protection from enemy air power. Tactical maneuver may require suppressive fires and covering terrain. Effective maneuver keeps the enemy off-balance and thus also protects the force. It continually poses new problems for the enemy, renders reactions ineffective, and eventually leads to defeat.

Maneuver occurs at both the operational and the tactical levels. *Operational maneuver* seeks a decisive impact on the conduct of a campaign. It attempts to gain advantage of position before battle and to exploit tactical successes to achieve operational results. *Tactical maneuver* seeks to set the terms of combat in a battle or engagement. It is the means of gaining and sustaining the initiative, exploiting success, preserving freedom of action, and reducing the vulnerability of friendly forces. At both levels, effective maneuver is vital to achieving superior combat power.

At all levels, effective maneuver demands air and ground mobility, knowledge of the enemy and terrain, effective command and control, flexible operational practices, sound organization, and reliable logistical support. Successful tactical maneuver depends on skillful movement along indirect approaches supported by direct and indirect fires. It may also use deception and concealment to cause an enemy to move. It requires imaginative, bold, competent, independent commanders; discipline, coordination, and speed; well-trained troops; and logistically ready units. Effective operational maneuver requires the anticipation of friendly and enemy actions well beyond the current battle, the careful coordination of tactical and logistical activities, and the movement of large formations to great depths.

Firepower. Firepower provides the destructive force essential to defeating the enemy's ability and will to fight. Firepower facilitates maneuver by suppressing the enemy's fires and disrupting the movement of forces. Firepower exploits maneuver by neutralizing the enemy's tactical forces and destroying the ability and will to fight. Firepower may also be used independent of maneuver to destroy, delay, or disrupt uncommitted enemy forces. Current weapons and means of massing fires make firepower devastatingly effective against troops, materiel, and facilities in greater depth and accuracy and with more flexibility than ever before. Tactical leaders must understand the techniques of controlling and integrating fire, maneuver and protection, coordinating direct and indirect fires, utilizing air and naval fires, and substituting massed fires for massed troops. Commanders must understand the techniques of integrating Air Force, naval, and Army firepower effectively in the conduct of campaigns and major operations.

Maximum effective firepower against the enemy requires that many functions be coordinated and performed well. Systems and procedures for allocating priorities must be effective. Targets must be efficiently located and identified. Gunnery must be rapid and accurate. Firing systems and supporting equipment must be mobile and moved to advantageous positions. There must be a steady supply of the proper munitions in adequate quantities. Hardware must be maintained and replaced as necessary. The various components of the firing system must be protected from enemy action. And most important, effective firepower depends on well-trained crews, observers, and fire direction personnel.

Protection. Protection is the conservation of the fighting potential of a force so that it can be applied at the decisive time and place. Protection has two components. The first includes all actions that are taken to counter the enemy's firepower and maneuver by making soldiers, systems, and units difficult to locate, strike, and destroy. Among those actions are security, air defense, dispersal, cover, camouflage, deception, suppression of enemy weapons, and mobility. Tactical commanders provide security against surprise maneuver, maintain camouflage discipline, fortify fighting positions, conduct rapid movements, suppress enemy weapons, provide air defense, conceal positions, deceive the enemy, and take other measures to prevent unnecessary combat losses. Operational commanders take similar measures on a larger scale. They protect the force from operational level maneuver and concentrated enemy air support. Air superiority operations, theaterwide air defense systems, and protection of air bases are important activities associated with maximizing combat power at the operational level.

The second component of protection includes actions to keep soldiers healthy and to maintain their fighting morale. It also means guarding their equipment and supplies from loss or damage. Tactical commanders take care of their soldiers' basic health needs and prevent unnecessary exposure to debilitating conditions. They consider the welfare and morale of soldiers and try to build cohesion and esprit in units. In addition they supervise preventive maintenance and expeditious repair and practice supply economy. Operational commanders ensure systems are in place for adequate medical care, expeditious return of minor casualties to duty, and preventive medicine. They protect stocks of supplies and ensure their proper distribution. They provide effective systems for maintenance evacuation and rapid replacement or repair of hardware. At times, they husband and ration supplies or enforce strict controls and priorities to ensure strength at the decisive time and place.

Leadership. The most essential element of combat power is *competent* and *confident leadership*. Leadership provides purpose, direction, and motivation in combat. It is the leader who will determine the degree to which maneuver, firepower, and protection are maximized; who will ensure these elements are effectively balanced; and who will decide how to bring them to bear against the enemy. There are no ready formulas to govern this process. Only excellence in the art and science of war will enable the commander to generate and apply combat power successfully. Thus no peacetime duty is more important for leaders than studying their profession and preparing for war.

The skill and personality of a strong commander represent a significant part of the unit's combat power. Although leadership requirements differ with unit size and type, all leaders must be persons of character; they must know and understand soldiers and the material tools of war. They must act with courage and conviction in the uncertainty and confusion of battle. The primary function of tactical leaders is to induce soldiers to do difficult things in dangerous, stressful circumstances. Successful combat leaders have differed in style and technique but all have been accomplished, effective soldiers.

Leaders develop potential combat power in their units through preparation before battle. Preparation includes many matters of long-term concern to the Army—force design, equipment design, and procurement, to name only a few. The tactical unit commanders have a more immediate perspective. To them, preparation means planning, logistical readiness, training, and motivation. These factors affect unit potential until the moment of engagement. Successful commanders have always continued training programs throughout campaigns on and near the battlefield. They recognized that every endeavor causes the unit to learn either good or bad habits. Continuous training under all conditions ensures that what is learned is positive and will contribute to success in battle. Commanders must demand excellence in execution under all conditions and must strive to make it habitual.

In the final analysis and once the force is engaged, superior combat power derives from the courage and competence of soldiers, the excellence of their training, the capability of their equipment, the soundness of their combined arms doctrine, and above all the quality of their leadership.

The Principles of War

Modern warfare requires the application of both the science and the art of war. The science of war is driven by new technological developments that can radically change the nature of the battlefield. The art of war, on the other hand, involves the critical historical analysis of warfare. The military professional derives from this analysis the fundamental principles—their combinations and applications—that have produced success on the battlefields of history. The principles of war, thus derived, belong to the art rather than the science of war. They are not immutable, and they do not provide precise mathematical formulas for success in battle. Their value lies in their utility for analysis of strategic, operational and tactical issues. For the strategist, the principles of war provide a set of questions that should be considered if military strategy is to best serve the national interest. For campaign planners and tacticians, these principles provide a conceptual framework for the military actions to be carried out. They are neither intended nor designed to be prescriptive; nor are they a substitute for the serious study of military history. The principles of war, when understood and applied properly, will stimulate thought and increase flexibility. For the US Army today, the principles of war are:

- Objective
- Offensive
- Mass
- Economy of Force
- Maneuver
- Unity of Command
- Security
- Surprise
- Simplicity

NOTE: The Air Force recognizes three additional principles of war. They are:

- Timing and tempo
- Logistics
- Cohesion

Objective. *Direct every military operation toward a clearly defined, decisive, and attainable objective.* A nation at war must supply the force necessary to attain the political purpose for which the war is being fought. When the potential purpose is the total defeat of the adversary, then the strategic military objective will be the destruction of the enemy's will to resist, including the unconditional surrender of the enemy's armed forces. Strategic objectives cannot clearly be identified and developed, however, until the political purpose has been determined by the president. Once developed, these objectives must constantly be analyzed and reviewed to ensure that they accurately reflect not only the ultimate political purpose but also any political constraints imposed on the application of military force.

Operational efforts must also be directed toward clearly defined, decisive, and attainable objectives that will achieve the strategic aims. Tactical objectives must achieve operational aims. The selection of objectives is based on the overall mission of the command, the commander's assigned mission, the enemy forces, the means available, and the military characteristics of the operational area. Commanders must understand the overall mission of the higher command, their own mission, and the tasks they must perform. They must clearly communicate their intent to their subordinate commanders.

Offensive. *Seize, retain, and exploit the initiative.* Offensive action is the most effective and decisive way to pursue and to attain a clearly defined, common goal. This is fundamentally true in the strategic, the operational, and the tactical senses. Although it may sometimes be necessary to adopt a defensive posture, this should be only a temporary condition until the necessary means are available to resume offensive operations. An offensive spirit must be inherent in the conduct of all defensive operations—the defense must be an active, not a passive one. Offensive action allows commanders to capture and hold the initiative, maintain freedom of action, and achieve results. It permits them to capitalize on the initiative, impose their will on the enemy, select the battlefield, exploit vulnerabilities, and react to rapidly changing situations and unexpected developments. The side that retains the initiative through offensive action forces the foe to react.

Mass. *Concentrate combat power at the decisive place and time.* In the strategic context, this principle suggests that the nation should commit, or be prepared to commit, national power to those regions where the threat to vital security interests is greatest. For the United States, which has global security interests, the accurate and timely determination of the largest and most likely threats to vital national interests is becoming increasingly more difficult. In today's volatile world, the nature and source of threat often change in dramatic fashion. Military strategists have to anticipate the most likely areas of concern and to develop suitable contingency plans. Since every possible contingency cannot be anticipated, Army planners must retain flexibility of thought.

In the operational and tactical dimensions, superior combat power must be concentrated at the decisive place and time to achieve decisive results. This superiority results from the proper combination of the elements of combat power at a place and a time and in a manner of the commander's choosing to neutralize or destroy the enemy. The massing of forces and firepower, together with the proper application of other principles of war, may enable numerically inferior forces to win battles and campaigns.

Economy of Force. *Allocate minimum essential combat power to secondary efforts.* As a reciprocal of the principle of mass, economy of force in the strategic dimension suggests that, in the absence of unlimited resources, a nation may have to accept risks in areas where vital national interests are not immediately at stake. If the nation must focus on a primary threat, it should not be diverted toward lesser threats. This choice involves risk, requires astute strategic planning and judgment by political and military leaders, and again requires flexibility of thought.

In the operational and tactical dimensions, the principle of economy of force requires that minimum means be employed in secondary areas. It requires the acceptance of prudent risks in selected areas to achieve superiority in the area where decision is sought. Economy-of-force missions may require the forces employed to attack, to defend, to delay, or to conduct deception operations.

Maneuver. *Place the enemy in a position of disadvantage through the flexible application of combat power.* Given the global nature of US interests and the dynamic character of the international scene, strategic mobility is critical. To react promptly and to concentrate and project power, strategic airlift and sealift are essential. Maneuver within the theater of operations focuses maximum strength against a crucial enemy weakness or vulnerability and thereby gains the advantage.

Maneuver is an essential element of combat power. It is the means by which the commander accepts battle, declines battle, and exploits tactical success. Maneuver helps to sustain the initiative, to exploit success, to preserve freedom of action, and to reduce vulnerability. The object of maneuver is to concentrate or to disperse forces in a manner designed to place the enemy at a disadvantage, thus achieving results that would otherwise be more costly in personnel and material. At all levels, successful application of this principle requires not only fire and movement, but also flexibility of thought, plans, and operations, and the considered application of the principles of mass and economy of force.

Unity of Command. *For every objective, ensure unity of effort under one responsible commander.* At the national level, the Constitution provides for unity of command by appointing the president as the commander in chief of the armed forces. The president is assisted in this role by the national security organization, which includes the secretary of defense and the Joint Chiefs of Staff at the strategic level, and the unified and specified commands and joint task forces at the operational levels.

Unity of command helps to focus effort on a common goal. At the strategic level, this common goal equates to the political purpose of the United States and the broad strategic objectives that flow therefrom.

In both the operational and tactical dimensions, military forces should be employed to develop their full combat power, which requires unity of command. Coordination may be achieved by cooperation; it is, however, best achieved by vesting a single commander with the requisite authority over all forces employed in pursuit of a common goal.

Security. *Never permit the enemy to acquire an unexpected advantage.* Security reduces friendly vulnerability to hostile acts, influence, or surprise. At the strategic level, security requires that active and passive measures be taken to protect the United States and its armed forces against espionage, subversion, and strategic intelligence collection.

Security is also necessary in planning and conducting campaigns. Security measures, however, should not be allowed to interfere with flexibility of thought and action, since rigidity and dogmatism increase vulnerability to enemy surprise. Thorough knowledge and understanding of enemy strategy, tactics, and doctrine, and detailed staff planning can improve security and reduce vulnerability to surprise.

At the tactical level, security is essential to the protection and husbanding of combat power. Security results from the measures taken by a command to protect itself from surprise, observation, detection, interference, espionage, sabotage, or annoyance. Security may be achieved through the establishment and maintenance of protective measures against hostile acts or influence. Or security may be assured by deception operations designed to confuse and dissipate enemy attempts to interfere with the force being secured. Risk is an inherent condition in war; application of the principle of security does not suggest overcautiousness or the avoidance of calculated risk.

Surprise. *Strike at a time or place, or in a manner, for which the enemy is unprepared.* Rapid advances in strategic surveillance technology make it increasingly more difficult to mask mobilization or movement of personnel and equipment. This problem is compounded in an open society such as the United States, where freedom of the press is assured. However, the United States can achieve a degree of surprise due to its strategic deployment capability. The rapid deployment of US combat forces into a crisis area can forestall the plans of an enemy.

Surprise at the operational and tactical levels can decisively affect the outcome of battles. With surprise, success out of proportion to the effort expended may be obtained. Surprise results from attacking where, when, or in a manner for which an enemy is unprepared. It is not essential that the enemy be taken unaware, but only that the enemy becomes aware too late to react effectively. Factors contributing to surprise include alacrity, employment of unexpected factors, effective intelligence, deception operations, variations of tactics and methods of operation, and operations security.

Simplicity. *Prepare clear, uncomplicated plans and clear, concise orders to ensure thorough understanding.* Guidance, plans, and orders should be as simple and direct as possible. Simplicity of plans and instructions contributes to successful operations. Direct, simple plans, and clear, concise orders are essential to reduce the chances for misunderstanding and confusion. Other factors being equal, a simple plan executed promptly is preferred over a complex plan executed later.

Application

The principles of war are interdependent. No single principle can be blindly observed to the exclusion of the others. None can assure victory in battle without reinforcement from one or more of the others. Indeed, the military forces of each nation conduct operations on the basis of operational concepts that are derived from combinations of principles. For example, an operational concept deriving from a combination of offense, mass, surprise, and maneuver might suggest a military force using large numbers of swiftly moving armored forces. These forces' dominant mode of operation is to overwhelm, disrupt, and destroy, using surprise and maneuver to assist in the execution.

The principles of war are an aid to judgment and analysis. The principles of objective and unity of command, for example, can assist in mission analysis at strategic, operational, and tactical levels. They are also valuable aids in determining the purpose and direction of effort. In a like manner, the principle of simplicity can serve as a measure for the formulation of tasks. The principles of offense, mass, economy of force, maneuver, security, and surprise can assist in the analysis of the situation as well as in the formulation of courses of action. Again, simplicity can serve as the measure against which the courses of action can be compared.

Planning. Planning is essential to the operation of the Army both in preparing for war and in the conduct of war itself. Planning is both a science and an art. As a science it deals with the specifics of personnel, arms, equipment, deployment capabilities, and monies, both actual and projected. However, since the future cannot be accurately predicted, planning is also an art. As such, it deals in unknowns; as a distillation of military art, the principles of war are particularly valuable as an aid to planning.

Operation Planning. Prepared by the commanders of unified and specified commands and their subordinate forces in response to requirements established by the Joint Chiefs of Staff, operation plans are developed for the conduct of military operations. Operation plans consist of deployment plans that focus on the strategic mobility problem and campaign plans that focus on effectively employing military resources once they have arrived within the theater. Operation plans are designed to identify appropriate courses of action. Application of the principles of war to the joint operation planning process makes the plans simpler and more practical and provides a direct link to actual execution on the battlefield.

AirLand Battle Doctrine

AirLand Battle doctrine describes the Army's approach to generating and applying combat power at the operational and tactical levels. It is based on securing or retaining the initiative and exercising it aggressively to perform the mission. The object of all operations is to impose our will upon the enemy—to achieve our purposes. To do this we must throw the enemy off-balance with a powerful blow from an unexpected direction, follow up rapidly to prevent recovery, and continue operations aggressively to achieve the higher commander's goals. The best results are obtained when powerful blows are struck against critical units or areas whose loss will degrade the coherence of enemy operations in depth, and thus most rapidly and economically fulfill the mission. From the enemy's point of view, these operations must be rapid, unpredictable, violent, and disorienting. The ce must be fast enough to prevent the taking of effec- e counteractions.

Our operational planning must orient on decisive ob- ctives. It must stress flexibility, the creation of oppor- nities to fight on favorable terms by capitalizing on emy vulnerabilities. The planning must also stress con- entration against enemy centers of gravity, synchro- ized joint operations, and aggressive exploitation of tac- cal gains to achieve operational results. Our tactical lanning must be precise enough to preserve synchroniza- on throughout the battle. At the same time, it must be lexible enough to respond to changes or to capitalize n fleeting opportunities to damage the enemy. Success n the battlefield will depend on the Army's ability to ight by four basic tenets: *initiative, agility, depth,* and *ynchronization*.

Initiative. Initiative means setting or changing the terms of battle by action. It implies an offensive spirit in the conduct of all operations. Applied to the force as a whole, initiative requires a constant effort to force the enemy to conform to our operational purpose and tempo while retaining our own freedom of action. Applied to individual soldiers and leaders, it requires a willingness and ability to act independently within the framework of the higher commander's intent. In both senses, initiative requires audacity that may involve risk taking and an atmosphere that supports it.

There are at least two kinds of risk in combat. One is the risk of losing personnel and equipment to attain the mission. The other is that a chosen course of action may not be successful, or even if successful, fail to achieve the desired effect. All leaders must take prudent risks of both types independently, based on their own judgment.

In the chaos of battle, it is essential to decentralize decision authority to the lowest practical level because overcentralization slows action and leads to inertia. At the same time, decentralization risks some loss of precision in execution. The commander must constantly balance these competing risks, recognizing that loss of precision is usually preferable to inaction. Decentralization demands subordinates who are willing and able to take risks and superiors who nurture that willingness and ability in their subordinates. If subordinates are to exercise initiative without endangering the overall success of the force, they must thoroughly understand the commander's intent and the situational assumptions on which it was based. In turn, the force commander must encourage subordinates to focus their operations on the overall mission, and give them the freedom and responsibility to develop opportunities that the force as a whole can exploit to perform the mission more effectively. Force commanders must then be able to shift their main effort quickly to take advantage of enemy vulnerabilities their subordinates discover or create.

Agility. Agility—the ability of friendly forces to act faster than the enemy—is the first prerequisite for seizing and holding the initiative. Such greater quickness permits the rapid concentration of friendly strength against enemy vulnerabilities. This must be done repeatedly so that by the time the enemy reacts to one action, another has already taken its place, disrupting plans and leading to late, uncoordinated, and piecemeal enemy responses. It is this process of successive concentration against locally weaker or unprepared enemy forces that enables smaller forces to disorient, fragment and eventually defeat much larger opposing formations.

To achieve this, both leaders and units must be agile. Friction—the accumulation of chance errors, unexpected difficulties, and the confusion of battle—will impede both sides. To overcome it, leaders must continuously "read the battlefield," decide quickly, and act without hesitation. They must be prepared to risk commitment without complete information, recognizing that waiting for such information will invariably forfeit the opportunity to act. Units likewise must be physically and psychologically capable of responding rapidly to changing requirements. Formations at every level must be capable of shifting the main effort with minimum delay and with the least possible necessity for reconfiguration and coordination.

Depth. Depth is the extension of operations in space, time, and resources. Through the use of depth, a commander obtains the necessary space to maneuver effectively; the necessary time to plan, arrange, and execute operations; and the necessary resources to win.

Momentum in the attack derives from depth. It is achieved and maintained when: (1) resources and forces are concentrated to sustain operations over extended periods, (2) adequate reconnaissance is provided beyond areas of immediate concern, (3) committed enemy forces are adequately fixed, (4) uncommitted enemy forces are interdicted or otherwise prevented from interfering, (5) adequate air protection is provided, (6) the enemy's command and control system is disrupted, (7) adequate reserves and follow and support forces are provided, (8) vulnerable rear area facilities are protected, (9) logistic resources are moved forward, and (10) combat forces project tactical operations deep into the enemy's vulnerable areas.

Elasticity in the defense also derives from depth. It is achieved and maintained when: (1) resources and forces are deployed in depth, (2) adequate reconnaissance is provided beyond areas of immediate concern, (3) reserves are positioned in depth with adequate manuever room to strike critical blows at exposed enemy forces, (4) uncommitted enemy forces are delayed or prevented from interfering with the defense forward-deployed or counterattacking forces, (5) adequate air protection is provided, (6) the enemy's command and control system is disrupted, (7) vulnerable rear area facilities are protected, and (8) defending forces aggressively concentrate combat power in critical areas.

In tactical actions, commanders fight the enemy throughout the depth of the enemy's dispositions with fires and with attacks on flanks, rear, and support echelons. Such operations in depth degrade the enemy's freedom of action, reduce flexibility and endurance, and upset plans and coordination. Commanders retain reserves and adjust their main efforts to exploit tactical opportunities and carry the fight into the depths of the enemy's formations or defenses. At the same time, they guard their own freedom of action by protecting their rear areas and support forces.

In pursuit of operational objectives, large unit commanders observe enemy movements in depth and protect their own vulnerabilities throughout the theater. In conjunction with air and naval operations, they employ maneuver, fires, and special operations to attack enemy units, facilities and communications throughout the theater and to force the enemy to fight battles on their terms. Following battle, theater operations in depth are used to extend the advantages gained by tactical success or to limit losses.

Exploitation of depth in operations demands imagination, boldness, foresight, and decisiveness in leaders. Commanders must see beyond the requirements of the moment, actively seek information on the area and the enemy in depth, and employ every asset available to extend their operations in time and space. They must also capitalize on natural and man-made obstacles by using less mobile forces to exploit these obstacles, thereby freeing mobile forces to maneuver over more favorable terrain.

Synchronization. Synchronization is the arrangement of battlefield activities in time, space, and purpose to produce maximum relative combat power at the decisive point. Synchronization is both a process and a result. Commanders synchronize activities; they thereby produce synchronized operations.

Synchronization includes but is not limited to the actual concentration of forces and fires at the point of decision. Some of the activities that must be synchronized in an operation—interdiction with maneuver, for example, or the shifting of reserves with the rearrangement of air defense—must occur before the decisive moment. These activities may take place at locations far distant from each other. Though they are separated in time and space, however, these activities are synchronized if their combined *consequences* are felt at the decisive time and place.

So defined, synchronization may and usually will require explicit coordination among the various units and activities participating in any operation. By itself, however, such coordination is no guarantee of synchronization, unless the commander first visualizes the consequences to be produced and how activities must be sequenced to produce them. Synchronization thus takes place first in the mind of the commander and then in the actual planning and coordination of movements, fires, and supporting activities.

Synchronization need not depend on explicit coordination if all forces involved fully understand the intent of the commander, and if they have developed and rehearsed well-conceived standard responses to anticipated contingencies. In the chaos of battle, when communications fail and face-to-face coordination is impossible, such implicit coordination may make the difference between victory and defeat. The enemy will do everything possible to disrupt the synchronization of friendly operations. The less that synchronization depends on active communication, the less vulnerable it will be.

In the end, the product of effective synchronization is maximum economy of force, with every resource used where and when it will make the greatest contribution to success and nothing wasted or overlooked. To achieve this requires anticipation, mastery of time-space relationships, and a complete understanding of the ways in which friendly and enemy capabilities interact. Most of all, it requires unambiguous unity of purpose throughout the force.

Close, Deep, and Rear Operations

Close, deep, and rear operations comprise a special and continuous synchronization requirement. For commanders at division and above, synchronization of close, deep, and rear operations will normally require deliberate planning and staff coordination, and such operation will frequently employ different assets. At brigade and below, close, deep, and rear activities are practically indistinguishable and will usually be conducted with the same assets. At every level, however, commanders must understand the relationship among these three arenas and their combined impact on the course of battle.

Close Operations. Close operations at any echelon comprise the current activities of major committed combat elements, together with their immediate combat support and combat service support. At the operational level, close operations comprise the efforts of large tactical formations—corps and divisions—to win current battles. At the tactical level, close operations comprise the efforts of smaller tactical units to win current engagements.

At any echelon, close operations include the close, deep, and rear operations of subordinate elements. Thus the close operation of a corps includes the close, deep, and rear operations of its committed divisions or separate brigades.

Not all activities taking place in proximity to the line of contact are close operations. For example, some forward surveillance and target acquisition may be functionally related to deep operations. Similarly, some engineer activities in the forward area may be related to rear operations. Activities are part of close operations if they are designed to support the current fight.

Among the activities typically comprising close operations are:

- Maneuver (including deep maneuver).
- Close combat (including close air support).
- Indirect fire support (including counterfire).
- Combat support/combat service support of committed units.
- Command and control.

Close operations bear the ultimate burden of victory or defeat. The measure of success of deep and rear operations is their eventual impact on close operations.

Deep Operations. Deep operations at any echelon comprise activities directed against enemy forces not in contact designed to influence the conditions in which future close operations will be conducted. At the operational level, deep operations include efforts to isolate current battles and to influence where, when, and against whom future battles will be fought. At the tactical level, deep operations are designed to shape the battlefield to assure advantage in subsequent engagements. At both levels, successful deep operations create the conditions for future victory.

At both levels, the principal targets of deep operations are the freedom of action of the opposing commanders and the coherence and tempo of their operations.

Among the activities typically conducted as part of deep operations are:

- Deception.
- Deep surveillance and target acquisition.
- Interdiction (by ground or air fires, ground or aerial maneuver, special operating forces [SOF], or any combination of these).
- Command, control, and communications countermeasures.
- Command and control.

Because of the relative scarcity of resources with which to perform these activities, deep operations must be focused against those enemy capabilities that most directly threaten the success of projected friendly operations. These must be attacked decisively, with enough power to assure the desired impact. As will frequently be the case, seizure and retention of the initiative depend on successful prosecution of deep operations.

Rear Operations. Rear operations at any echelon comprise activities rearward of elements in contact designed to assure freedom of maneuver and continuity of operations, including continuity of sustainment and command and control. Rear operations may have little immediate impact on close ground operations, but are critical to subsequent operations, whether in exploiting success or recouping failure. At the operational level, rear operations focus on preparing for the next phase of the campaign or major operation. At the tactical level, rear operations underwrite the tempo of combat, assuring the commander the agility to take advantage of any opportunity without hesitation or delay.

Four rearward activities in particular must be conducted as part of rear operations: assembly and movement of reserves, redeployment of fire support, maintenance and protection of sustainment effort, and maintenance of command and control. Reserves must be positioned to support their anticipated commitment and secured from observation and attack. Probable deployment routes must be free of obstruction, and the actual movement of reserves protected from enemy observation and interdiction. Fire support assets likewise must be redeployed to support future operations, and that redeployment protected from enemy detection and interference. Sustainment facilities and supplies must be secured against ground, air, and missile attack. Also, stocks to support projected operations must be accumulated without decreasing the support to currently engaged units. And command posts and communications networks must be deployed where they can continue the fight without a break in operating tempo.

In addition to these critical activities, others relevant to rear operations include:

- Establishment and maintenance of lines of communications (LOCs).
- Traffic regulation and control.
- Medical and field services.
- Refugee control and maintenance of civil order.

By themselves, none of these activities would normally have much impact on the current battle. However, because it is precisely these activities that will be the targets of the enemy's deep operations, their protection can easily begin to divert needed assets from the forward battle. To preclude this, units involved in rear operations must be equipped and trained to protect themselves against all but the most serious threats, using both passive and active measures. Soldiers and leaders at all levels must be alert to the rearward threat and psychologically prepared to deal with it. Also, force commanders and staffs must continually reevaluate the possibility of more serious threats to rear operations and plan measures to meet them with minimum penalty to ongoing close operations.

Command and Control

Common to all operations—close, deep, and rear—is the necessity for superior command and control. The command and control system that supports the execution of AirLand Battle doctrine must facilitate freedom to operate, delegation of authority, and leadership from any critical point on the battlefield. Plans are the initial basis of action, but commanders must expect considerable variation from plans in the course of combat. Ideally, the initial plan for an operation will establish the commander's intent and concept of operations and the responsibilities of subordinate units. It will, however, leave the greatest possible operational and tactical freedom to subordinate leaders. The plan must therefore be flexible enough to permit variation by subordinates in pursuit of the commander's goals.

Whenever possible, subordinate leaders should receive their orders face-to-face from their commanders on the ground chosen for the operation. Commanders should restrict the operations of their subordinates as little as necessary. Mission orders that specify *what* must be done without prescribing *how* it must be done should be used in most cases. Control measures should secure cooperation between forces without imposing unnecessary restrictions on the freedom of junior leaders. The larger force should remain alert to and be prepared for exploitation of advantages developed by subordinate units through the course of any operation.

A command and control system seeking to promote such flexibility and freedom to operate independently must emphasize certain specific operational techniques and command practices. First, it must optimize the use of time by routine use of warning orders, situation updates, and anticipatory planning and positioning of forces.

The command and control system must also stress standardized training in operations and staff practices to assure mutual understanding between leaders and units. In turn, this requires both military education throughout the Army and the other services and reinforcing training within units. Wargaming, rehearsals, and realistic training promote initiative and flexibility by preparing units and their leaders for cooperation in the chaos of combat without time-consuming coordination.

Further, the command and control system must permit tactical leaders to position themselves wherever the situation calls for their personal presence. This must be done without depriving them of the ability to respond to opportunities or changing circumstances with the whole force. To do this requires solid staff work and strongly developed skills of tactical anticipation. Leaders throughout the force must be ready to change directions of movement, bases of fire, support arrangements, and task organizations without hestitation during operations. Succession of command when a leader is killed or disabled must be provided for in advance and accomplished without disruption of the operation.

This need for flexibility in command and control is greater for the committed maneuver unit commanders than for anyone else. They cannot depend on constant direction but must fight independently even when they cannot communicate outside their own zone or sector. They must know the intention of the commanders two levels above them, understand the concept of operation of the immediate commander, and know the responsibilities of the units on their flanks and in support of their operations. If they understand these things, the committed commanders can conduct their operation confidently, anticipate events, and act freely and boldly to perform their missions without further orders.

The same principles apply at the operational level of war. Lead times are longer and forces are slower to move, but mission orders, anticipation of requirements, and initiative are equally important. The inherently joint nature of campaign planning and direction makes mutual understanding and practiced cooperation all the more important in theater operations.

Staffing, equipment, and organizational concerns vary among levels of command. In every case, however, the only purpose of command and control is to implement the commander's will in pursuit of the unit's objective. The system must be reliable, secure, fast, and durable. It must collect, analyze, and present information rapidly. It must communicate orders, coordinate support, and provide direction to the force in spite of enemy interference, destruction of command posts, or loss and replacement of commanders. The ultimate measure of command and control effectiveness is whether the force functions more effectively and more quickly than the enemy.

AirLand Battle Imperatives

Though initiative, agility, depth, and synchronization characterize successful AirLand Battle operations, the imperatives listed below prescribe key operating requirements. These provide more specific guidance than the principles of war and the AirLand Battle tenets, and apply to all operations. They are historically valid and fundamentally necessary for success on the modern battlefield. The ten imperatives of AirLand Battle are:

- Ensure unity of effort.
- Anticipate events on the battlefield.

- Concentrate combat power against enemy vulnerabilities.
- Designate, sustain, and shift the main effort.
- Press the fight.
- Move fast, strike hard, and finish rapidly.
- Use terrain, weather, deception, and operations security (OPSEC).
- Conserve strength for decisive action.
- Combine arms and other services to complement and reinforce.
- Understand the effects of battle on soldiers, units, and leaders.

Ensure Unity of Effort. Commands must not only ensure unity of effort within their own organizations but must also promote it with supporting and supported elements as well as with the other services and allies. The fundamental prerequisite for unity of effort within Army organizations is an effective system of command that relies upon leadership to provide purpose, direction, and motivation. A system that also emphasizes well-understood common doctrine, tactics, and techniques as well as sound unit standing operating procedures (SOPs); and takes effective measures to limit the effects of friction. Leaders set the example, communicate their intent clearly, build teamwork, promote sound values, accept responsibility, delegate authority, anticipate developments, take decisive actions, and accept risks. Command and control systems emphasize such implicit coordination measures as sound training in a common doctrine, standing operating procedures, methods, and techniques, and well-rehearsed battle drills. Missions are clear and concise. Plans are simple. Control mechanisms are easy to apply, understand, and communicate. Habitual relationships are used to maximize teamwork. A main effort is always clearly designated and ground plans are thoroughly coordinated with plans for air support. All actions throughout the force are performed so as to ensure the success of the main effort. Liaison among units must be automatic and effective.

Anticipate Events on the Battlefield. The commander must anticipate the enemy's actions and reactions and must be able to foresee how operations may develop. Predictions about the enemy and even our own troops can never be relied on with certainty, but it is nevertheless essential to anticipate what is possible and likely and prepare for those possibilities. Anticipating events and foreseeing the shape of possibilities hours, days, or weeks in the future are two of the most difficult skills to develop, yet among the most important. They require wisdom, experience, and understanding of the enemy's methods, capabilities, and inclinations, outstanding intelligence, and confidence in the knowledge of how one's own forces will perform. Anticipation and foresight are critical to turning inside the enemy's decision cycle and maintaining the initiative.

Concentrate Combat Power against Enemy Vulnerabilities. Concentrating combat power against enemy vulnerabilities is also fundamental to AirLand Battle operations. Commanders must seek out the enemy where the enemy is most vulnerable to defeat. To know what these vulnerabilities are, commanders must study the enemy, know and take into account the strengths, find the inherent vulnerabilities, and know how to create new vulnerabilities that can be exploited to decisive effect. Having identified or created enemy vulnerabilities, commanders must have the mental and organizational flexibility to shift main effort as necessary to gain the greatest possible advantage. Combat power must be concentrated to reach points of enemy vulnerability quickly without loss of synchronization.

Designate, Sustain, and Shift the Main Effort. In operations characterized by initiative, agility, depth, and synchronization, it is imperative that commanders designate, sustain, and shift the main effort as necessary during operations. The main effort is assigned to the element with the most important task to accomplish within the commander's concept. Commanders concentrate their support to ensure quick success by this element. Commanders identify the main effort when they state their concepts of the operation. This provides a focus of effort that subordinate commanders use to link their actions to the actions of those around them. The main effort assures synchronization in the operation while leaving the greatest possible scope for initiative. During operations, the main effort is sustained with supporting forces and assets. If conditions change and success of the overall mission can be obtained more cheaply or quickly another way, commanders shift their main efforts to another force. Priorities of support also change to assure the success of the newly designated main effort.

Press the Fight. Commanders must press the fight tenaciously and aggressively. Campaigns or battles are won by the force that is most successful in pressing its main effort to a conclusion. To sustain the momentum of early successes, leaders must deploy forces in adequate depth and arrange for timely and continuous combat support and combat service support at the outset of operations. Then, they must accept risks and tenaciously press soldiers and systems to the limits of endurance for as long as necessary.

Move Fast, Strike Hard, and Finish Rapidly. Speed has always been important to combat operations. It will be even more important on the next battlefield because of the increasing sophistication of sensors and the increasing lethality of conventional, nuclear, and chemical fires. To avoid detection, our force concentrations must be disguised. To avoid effective counterstrikes, they must be brief. Engagements must be violent to shock, paralyze, and overwhelm the enemy force quickly. They must be terminated rapidly to allow the force to disperse and avoid effective enemy counterstrikes.

Use Terrain, Weather, Deception, and Operations Security. Terrain and weather affect combat more significantly than any other physical factors. Battles are won or lost by the way in which combatants use the terrain to protect their own forces and to destroy those of the enemy. The ground and the airspace immediately above it have an immense influence on how the battle will be fought. They provide opportunities and impose limitations, giving a decisive edge to the commander who uses them best. The impact of weather on ground and air mobility and the effect both have on weapons will affect tactics and the timing and course of operations. One of the best investments of the commander's time before battle is an intensive, personal reconnaissance of the terrain. Similarly, effective deception and tight operations security can enhance combat power by confusing the enemy and reducing foreknowledge of friendly actions.

Conserve Strength for Decisive Action. Successful commanders conserve the strength of their forces to be stronger at the decisive time and place. Commanders must minimize the diversion of resources to nonessential tasks and retain a reserve for commitment when needed most. Commanders must also keep troops secure, protected, healthy, disciplined, and in a high state of morale. In addition they must keep equipment ready and stocks of supplies available for commitment when needed. Finally, units must be maintained in a high state of training. Dispersed and rapid movement, proper formations, covered and concealed fighting positions, aggressive patrolling, and good operations security are examples of measures that conserve a force's strength. Other examples are protection of troops and equipment from adverse weather and disease and good supply and maintenance discipline.

Combine Arms and Other Services to Complement and Reinforce. The greatest combat power results when weapons and other hardware, combat and supporting arms, Army units, and other service elements of different capabilities are employed together to complement and reinforce each other. Arms and services *complement* each other by posing a dilemma for the enemy. As enemy forces evade the effects of one weapon, arm, or service, they expose themselves to attack by another. A tactical example of complementary combined arms employment between the services is when Air Force aircraft attack tanks in defilade and out of reach of direct ground fires and attack helicopters while artillery and direct fires suppress enemy air defenses. At the operational level, an example would be Air Force air superiority operations and ground maneuver.

Arms and services *reinforce* each other when one increases the effectiveness of another, or several combine to achieve mass. Tactically, reinforcement might involve concentrating all types of maneuver forces or fires to create mass. It might also involve heliborne lift of light infantry. Operationally, reinforcement could mean using naval amphibious shipping or Air Force tactical airlift to deliver soldiers to the battlefield or intelligence support to Army units from Air Force, naval, or national sources. It could also be Air Force interdiction to support maneuver on the ground or US Army units protecting air bases from ground attack.

Understand the Effect of Battle on Soldiers, Units, and Leaders. Commanders and their staffs must understand the effects of battle on soldiers, units, and leaders because war is fundamentally a contest of wills, fought by people not machines. Ardant DuPiq, a nineteenth-century soldier and student of men in battle, reminded us that "you can reach into the well of courage only so many times before the well runs dry." Even before that Marshal de Saxe, writing in the eighteenth century, pointed out that "A soldier's courage must be reborn daily." He went on to say that the most important task of leaders was to understand this, to care for and prepare soldiers before battle, and to use tactics during battle that take this into account.

Commanders must understand that in battle, personnel and units are more likely to fail catastrophically than gradually. Commanders and staffs must be alert to small indicators of fatigue, fear, indiscipline, and reduced morale and take measures to deal with these *before* their cumulative effects drive a unit to the threshold of collapse. Staffs and commanders at higher levels must take into account the impact of prolonged combat on subordinate units. Military organizations can fight at peak efficiency for only so long. Prolonged demands of combat cause efficiency to drop even when physical losses are not great. Well-trained, physically fit soldiers in cohesive units retain the qualities of tenacity and aggressiveness longer than those that are not.

Good leadership makes the vital difference in the staying power and effectiveness of units. Although all units experience peaks and valleys in combat effectiveness, well-trained, cohesive units under good leadership sustain far higher average effectiveness. Staffs and commanders need to take this variance in performance into account in their planning. This is done by (1) matching units to missions, (2) rotating units through difficult tasks to permit recuperation to the extent possible, and (3) basing their expectations of a unit's performance on a full knowledge of its current capabilities.

Because modern combat requires greater dispersal of units, the quality and effectiveness of junior leaders has a proportionately greater impact. Before combat, senior leaders must place great emphasis on junior leader development. During combat, commanders must monitor and take measures to sustain the effectiveness of leaders to the extent possible.

Summary

AirLand Battle doctrine is evolutionary. Although the conditions of warfare change with time and circumstance, the fundamental dynamics of violent conflict remain unaltered. The essential qualities of skill, tenacity, boldness, and courage that have always marked successful armies and commanders will continue to determine the victor in battle in the future, as they have in the past.

AirLand Battle doctrine exploits those qualities, together with the technological prowess, self-reliance, and offensive spirit that characterize the American soldier. It requires combined arms and joint forces to extend the battlefield and thus hold at risk all enemy forces, harnessing advanced technologies to provide synchronized reconnaissance, real-time intelligence fusion, target attack, and maneuver. While respecting the increased complexity and lethality of modern weapons. AirLand Battle doctrine also recognizes that such weapons are no better than the skill with which they are brought to bear on the enemy. Properly understood and instilled through effective training, the principles of operation prescribed by AirLand Battle doctrine will produce the skill to match the US Army's will to win.

Combat Operations

AirLand Battle doctrine recognizes that modern warfare is likely to be fluid and nonlinear. Therefore it takes an enlarged view of the battlefield, stressing unified air, ground, and sea operations throughout the theater. It recognizes that the theater of operations in a campaign extends from ports and support areas far to the rear of the line of contact to similarly distant sources of enemy support. Likewise the tactical battlefield with its unified close, deep, and rear operations includes every area and enemy unit that can affect the outcome of the immediate fight and the future operations of a force. AirLand Battle doctrine distinguishes the operational level of war—the design and conduct of campaigns and major operations—from the tactical level that deals with battles and engagements. It asserts that whether attacking or defending, success depends on securing the initiative as early as possible and exercising it aggressively. It requires that every weapon, asset, and combat multiplier be used to gain that initiative, to throw the enemy off-balance with a powerful blow from an unexpected direction, and to follow up rapidly to prevent recovery. At both the operational and tactical levels, initiative, agility, depth, and synchronization are the essence of AirLand Battle doctrine. This chapter discusses the planning and conduct of campaigns, major operations, battles, and engagements.

Planning and Conducting Campaigns and Major Operations

The principal task of theater commanders and their subordinate commanders is to concentrate superior strength against enemy vulnerabilities at the decisive time and place to achieve strategic and policy aims. The overall joint or allied commander in each theater of operations plans and executes campaigns and major operations that optimize the use of all available combat, combat support (CS), and combat service support (CSS) forces. Ground, air, and naval operations are synchronized to support each other and to fulfill the requirements of the overall joint commander's campaign plan. Army and Air Force component commanders will usually be subordinated to the joint commander. There may also be Navy and Marine component commanders. Moreover these forces may be multinational.

Campaign Planning. Operational planning begins with strategic guidance to a theater commander or with the commander's recognition of a mission in an active theater of operations. Operational commanders and their staff officers use the estimate of the situation and planning process described in FM 101-5, *Staff Organization and Operations*. Usually, they will be involved in joint and combined operations, however, and will therefore cooperate with commanders and staffs of other services and other nationalities as they plan at the operational level. In planning and conducting joint operations, they will use prescribed joint operations planning and execution systems.

Operational planning concentrates on the design of campaigns and major operations. At theater level, campaign planning entails converting broad strategic guidance into a campaign plan for a joint/combined force. Operational planning within each theater of operations focuses on execution of the campaign plan and on the staging, conduct, and exploitation of major operations.

Each joint or combined commander responsible for a theater of operations makes a campaign plan to implement the joint or combined strategic guidance and to give direction to subordinate component commands. Ground operations planning must be coordinated with air and naval operations plans to assure mutual support.

Campaign plans set long-term goals—strategic aims as control of a geographical area, reestablishment of political boundaries, or the defeat of an enemy force in the theater of operations. These must be accomplished in phases in most cases. Accordingly, the campaign plan usually provides both a general concept of operations for the entire campaign and a specific plan for the campaign's first phase.

The plan for the first phase of the campaign states the commander's intent, distributes forces to major subordinate units, disposes the force for operations, and coordinates air and naval support of ground maneuver. The general object of the plan is to set the terms for the next battle to the greatest advantage of the friendly force.

Good campaign plans also provide options for the operation under way and for the period following the coming battle. "Branches" to the plan—options for changing dispositions, orientation, or direction of movement and accepting or declining battle—preserve the commander's freedom of action. Such provisions for flexibility anticipate the enemy's likely actions and give the commander a means of dealing with them quickly. Expressed as contingency plans, such branches from the plan can be of decisive importance since they shorten the friendly decision cycle and may allow the large unit commander to act faster than the opponent.

Actions after battle or *sequels* are also an important means of anticipating the course of action and accelerating the decision cycle. Sequels to a future battle are based on possible outcomes—victory, defeat, or stalemate. They establish general dispositions, objectives, and missions for subordinate units after the battle. They then can be amended as necessary and ordered into effect.

Such plans are crucial to operational success because they determine how tactical success will be exploited or the operational consequences of tactical setbacks minimized. Transition to exploitation, counteroffensive, withdrawal, retreat, or reorientation of the main effort should be addressed as possible sequels to the planned battle. All of these actions depend on timely execution. They can only be carried out effectively if they have been planned in advance. In most cases, they will require the retention of an operational reserve.

Major Operations Planning. Although major operations are usually joint operations, they may also occasionally be independent operations. Even then, however, joint planning will be required. Normally, one major ground operation will receive priority and constitute the main effort. This decision at the level of campaign planning will affect various aspects of air and naval planning by outlining priorities and effects desired to complement large-scale ground action. In general, operational planning commits forces and support to corps and armies for an extended period. Commanders of corps and armies receive long-range objectives and great freedom in design of their own operations. Operational plans also provide for close integration of psychological operations, unconventional warfare, and civil-military operations in support of the campaign.

Key Concepts of Operational Design. The center of gravity, the line of operations, and the culminating point are three concepts that are central to the design and conduct of major campaigns and operations. Although not new in application, they have not been dealt with in doctrine for some time and therefore deserve further explanation.

The center of gravity. The concept of centers of gravity is key to all operational design. It derives from the fact that an armed combatant, whether a warring nation or alliance, an army in the field, or one of its subordinate formations, is a complex organism. This concept's effective operation depends not merely on the performance of each of its component parts, but also on the smoothness with which these components interact and the reliability with which they implement the will of the commander. As with any complex organism, some components are more vital than others to the smooth and reliable operation of the whole. If these are damaged or destroyed, their loss unbalances the entire structure, producing a cascading deterioration in cohesion and effectiveness. This deterioration may result in complete failure, and will invariably leave the force vulnerable to further damage.

The center of gravity of an armed force refers to its sources of strength or balance. It is that characteristic, capability, or locality from which the force derives its freedom of action, physical strength, or will to fight. Clausewitz defined it as "the hub of all power and movement, on which everything depends." Its attack is—or should be—the focus of all operations.

Tactical formations can and frequently will have centers of gravity—a key command post, for example, or a key piece of terrain on which the unit's operations are anchored. But the concept is more usually and usefully applied to larger forces at the operational level. At this level the very size of the enemy force and the scale of its operations make difficult the decision where and how best to attack it.

Even at this level, the center of gravity may well be a component of the field force. The component may be the mass of the enemy force, the boundary between two of its major combat formations, a vital command and control center, or perhaps its logistical base or lines of communication. But an operational center of gravity may also be more abstract—the cohesion among allied forces, for example, or the mental and psychological balance of a key commander.

Finally, at the strategic level, the center of gravity may be a key economic resource or locality, the strategic transport capabilities by which a nation maintains its armies in the field, or a vital part of the homeland itself. But it may also be a wholly intangible thing. At Verdun in 1916, for example, German and French armies sacrificed over a million men contesting a piece of real estate of little intrinsic tactical or operational value. But the moral importance to both sides made its uncontested surrender unthinkable. Similarly neither Dien Bien Phu nor Tet seriously threatened the operational capacity of French and American forces respectively. But both attacks struck directly at their strategic centers of gravity—popular and political support of the war.

At any level, identifying the enemy's center of gravity requires extensive knowledge of the organizational make-up, operational patterns, and physical and psychological strengths and weaknesses. Moreover, centers of gravity can change. A major shift in operational direction, the replacement of a key enemy commander, the fielding of new units or weaponry—any of these events can shift the center of gravity significantly, just as adding new weights to a scale alters its point of balance. Commanders seeking to strike the enemy's center of gravity must be alert to such shifts, recognize them when they occur, and adjust their own operations accordingly.

It should be remembered that though attacking the center of gravity may be the surest and swiftest road to victory, it will rarely be the easiest. To force the enemy to expose the center of gravity to attack will require indirect means. In the process, enemy forces will do their best to uncover and attack our center of gravity. Identification of the enemy's center of gravity and the design of actions that will ultimately expose it to attack and destruction, while protecting our own, are the essence of the operational art.

Lines of operation. Lines of operation define the directional orientation of a force in relation to the enemy. Lines of operation connect the force with its base or bases of operation on the one hand and its operational objective on the other. Usually a campaign or major operation will have a single line of operation, although multiple lines of operation in a single campaign are not uncommon. Often, such situations produce difficulties, as in the Allied campaign in northern France and the low countries, where Field Marshal Bernard L. Montgomery and Gen George S. Patton competed for resources that might have been concentrated in support of one or the other commander.

As that example suggests, the decision whether to operate on one or several lines of operation will depend heavily on the availability of resources. Given adequate resources, operations on multiple lines have the advantage of forcing the enemy to disperse efforts. They have the disadvantage of being difficult to synchronize and of making several forces vulnerable to interposition by the enemy and piecemeal defeat.

Overall, the historical evidence suggests that multiple lines of operation are most likely to produce success when the enemy is weak, irresolute, or lacks freedom of maneuver.

Although lines of operation are important considerations in the design of campaigns and major operations, their importance should not be overdrawn. History is replete with examples of armies that overcame positional disadvantages by audacity, agility, and sheer tenacity. The operational commander should choose the line of operation carefully but must not hesitate to alter it when presented with an unanticipated opportunity.

Culminating points. Unless it is strategically decisive, every offensive operation will sooner or later reach a point where the strength of the attacker no longer significantly exceeds that of the defender. Beyond this point, continued offensive operations risk overextension, counterattack, and defeat. In operational theory, this point is called the culminating point. The art of attack at all levels is to achieve decisive objectives before the culminating point is reached. Conversely, the art of defense is to hasten the culmination of the attack, recognize its advent, and be prepared to go over to the offense when it arrives.

Strategic and operational offensives reach a culminating point for several reasons. The forward movement of supplies may be insufficiently organized or may lack needed transport, or available stocks may be exhausted. The need to protect lines of communications from partisans or regular forces operating on the flanks or in the rear may have sapped the strength of forward forces to the point that the attacker no longer has the needed quantitative advantage. The attacking force may have suffered sufficient combat losses to tip the balance of forces. The attacker may have entered terrain that is more easily defended. The soldiers of the attacking army may become physically exhausted and morally less committed as the attack progresses. The defending force may have become more determined as large portions of territory are lost. The defender may have been joined by new allies who now also feel threatened. All of these causes, and combinations of them, have resulted in offensive culminating points. Today another can be added. If defenders possess nuclear weapons, they may at some point be pressed into using these weapons in spite of the risk of retaliation.

Tactical attacks can also reach culminating points for similar, but scaled down, reasons. Usually tactical attacks lose momentum when they encounter heavily defended areas that cannot be bypassed. They also reach a culminating point when the supply of fuel and ammunition fails to keep up, the attacking troops become physically exhausted, casualties and equipment losses mount, and repair and replacement don't keep pace. But tactical attacks also stall when reserves are not available to continue the attack, the defender is reinforced, or counterattacks with fresh troops. Several of these causes may combine to halt an attack.

There are numerous historical examples of strategic, operational, and tactical offensives that reached culminating points before reaching their objectives. Often this was because planners were not able to adequately forecast the drain on resources of extended fighting at great depths.

From the foregoing discussion, it should be clear that culminating points are equally important to the attacker and the defender. From a planning perspective, the attacker must seek to secure operationally decisive objectives before the force reaches its culminating point. If this cannot be anticipated, the attacker must plan a pause to replenish combat power and phase the operation accordingly.

The defender must seek to bring the enemy attack to or past its culminating point before it reaches an operationally decisive objective. To do so, the defender must operate not only on the enemy force itself, but also on its sustainment system. The more readily the defender can trade space for time without unacceptable operational or strategic loss, the easier this will be.

Once operations begin, attacking commanders must sense when they have reached or are about to reach their culminating point, whether intended or not, and revert to the defense at a time and place of their own choosing. The defenders must be alert to recognize when their opponents have become overextended and be prepared to pass over to the counteroffensive before the attackers are able to recover their strength.

Conducting Campaigns and Major Operations. At the operational level of war, large unit commanders mass or maneuver tactical formations to bring the enemy to battle under the best terms possible. Attacks in depth with air-delivered weapons, missiles, and airmobile troops isolate portions of the enemy's force for attack or break up the continuity of the operation.

In open warfare, large unit commanders conduct aggressive reconnaissance and employ advance security forces to preserve their freedom of action. In trying to mass decisive strength at the decisive point, commanders maintain contact with the enemy and adjust their movements to conceal their intentions and to bring their forces to bear against an enemy vulnerability.

This requires the coordinated movement of large forces to preserve mutual support, sufficient air defense, adequate service support, and ready access to operational reserves. Original plans for concentration may demand modification as the enemy situation changes or becomes clear. Therefore, tactical formations must be able to modify directions of movement or orientation of defenses during operations.

During battle, the larger operation continues. Tactical formations may have to be moved in response to the operational situation or the battle itself may have to be shaped to meet operational objectives. The greatest concern of the large unit commanders during battle will be to defeat the enemy's operational reserves and commit their own at the decisive time and place. Friendly operational reserves—corps or divisions held in reserve by the large unit commanders—are used to exploit the results of battle by penetrating enemy defenses completely. In defense, such reserves execute the commanders' counterstrokes to defeat the attack or initiate the counteroffensive. In case of a reverse, the operational reserve can limit the enemy's success or cover the force's withdrawal.

Planning and Conducting Tactical Operations

Tactical operations are the conduct of battles and engagements within the context of campaigns and major operations. They are the domain of corps and smaller units. They are supported by higher echelons of command who set the terms of battle and provide support for it. Brigades and smaller units may fight engagements—smaller, separate actions—either as part of a battle or as separate actions. Tactical success is measured by the success or failure to achieve aims set by higher commanders.

Battles are large engagements involving brigades and larger forces. They may be localized, brief and intense, or they may involve numerous engagements over a large area that take days to resolve. In any case, their effects are felt over a large area, and actions outside of the area of direct, sustained combat can greatly influence their outcome.

The conduct of battles differs from that of campaigns and major operations in some important respects. Speed of response, ability to change direction, and sensitivity to short-term events are among these differences. Conduct of operations depends on initiative, agility, depth, and synchronization, however, and leaders should observe the imperatives of modern combat.

In conducting battles and engagements, commanders must act vigorously and boldly. They must follow the course of the fight throughout the contested area to seize opportunities for decisive action. They must also be willing to take risks to inflict heavy losses on the enemy and to retain the initiative.

Corps and divisions conduct mutually supporting operations simultaneously in three areas—close, deep, and rear. All tactical operations require overall unity of effort throughout the battle, using every available element of combat power. Tactical operations must consider the effects of enemy air power, of nuclear and chemical weapons, and of electronic warfare operations. Most important, tactical operations are influenced by the nonquantifiable elements of combat power: courageous, well-trained soldiers, and skillful, effective leaders.

To ensure success, tacticians concentrate on:

- Anticipating the enemy.
- Indirect approaches.
- Deception and effective operations security (OPSEC).
- Speed and violence.
- Flexibility and reliance on the initiative of junior leaders.
- Rapid decisionmaking.
- Clearly defined objectives and operational concepts.

- A clearly designated main effort.
- Actions throughout the depth of the battle area.
- Joint operations with our other services.

Tactical Planning. Tactical planning centers on reparation for battles and engagements. Like opera- onal planning, tactical planning begins with the assign- ient of a mission or with the commander's recognition f a requirement. It continues until the mission is com- lete. The planning process is described in detail in FM 01-5. In essence it requires full definition of the mission, ollection of all pertinent information, development and nalysis of options, and, finally, a decision that forms he basis for a plan or order. This process is a continuous ycle. Planning is as thorough as time allows. The key o successful planning is anticipation of future events and being prepared for contingencies.

After the mission has been analyzed, the most important task of a staff is collecting information. This usually amounts to updating existing estimates and analyzing the facts in the light of the unit's new mission.

All primary staff officers have responsibilities for collecting information and making estimates before and during operations. Not only do they collect information, they also supervise operations to bring strength, readiness, training, and supply stocks to the highest levels possible before the operation. The aim of all these activities is to provide the commander with the greatest strength possible and a clear understanding of the situation.

Preparing the intelligence estimate differs from other planning. It concentrates on physical phenomena—terrain and weather—which cannot be significantly modified. It also demands the acquisition of information about the enemy that the opposing commander tries to withhold and misrepresent.

In tactical planning, the scheme of maneuver is the central expression of the commander's concept for close operations. The scheme of maneuver:

- Outlines the movements of the force.
- Identifies objectives or areas to be retained.
- Assigns responsibilities for zones, sectors, or areas.
- Prescribes formations or dispositions when necessary.
- Identifies maneuver options that may develop during an operation.

The commander's scheme of maneuver usually determines the subsequent allocation of forces and governs the design of supporting plans or annexes. Fires, barriers, air defense priorities, electronic warfare (EW), deception efforts, combat support, and combat service support (CSS) arrangements are normally guided by and coordinated with the scheme of maneuver.

Whenever possible, commanders design their tactical plans to avoid the enemy's strength and strike at weaknesses. Maneuver units can inflict the greatest damage on the enemy by avoiding head-on encounters with deployed forces. Instead they should operate on the flanks and rear where direct fire is most effective, psychological shock is the greatest, and the enemy is least prepared to fight. Maneuver in defensive counterattacks is particularly important and must be planned in detail. By coordinating attacks on the enemy in depth with attacks on forward units, the commander:

- Preserves or secures the initiative.
- Upsets the enemy's plan.
- Disrupts the enemy's coordination.
- Destroys the enemy's most sensitive forces—reserves, artillery, command and control, and logistic support.

The tactical plan should gain surprise. It should use indirect approaches and flank positions that do not attract immediate attention. Subordinate commanders should have the greatest possible freedom to maneuver.

The tactical plan should include such supplementary control measures as routes, axes, objectives, and battle positions for implementation on order. Such measures provide the necessary flexibility for responding to changes in the situation. Their use gives commanders a substantial advantage by allowing them to implement changes quickly.

The plan should also designate axes of advance and routes for the commitment or movement of reserves or for the forward or rearward passage of one unit through another. It should also identify air axes for the maneuver of attack helicopter and air cavalry units or for the helicopter movement of air assault (AASLT) units and other forces.

Movement of supporting units is also critical to the success of the tactical plan. Commanders must assure the uninterrupted support of field artillery, air defense, air support, engineer, military intelligence, and logistic units. To do so, they must plan multiple routes throughout the area of operations and closely control their use. Military police must be prepared to facilitate these movements, to prevent congestion, and to respond to changes in the maneuver plan.

When planning operations, the commanders must take into account the effects of nuclear and chemical weapons. Commanders must avoid creating lucrative targets as they maneuver. They should also avoid positions that can be isolated by the obstacles that nuclear weapons create. Commanders must constantly seek to minimize the overall risk by dispersing their commands into small units that are not worthwhile targets. Yet they must concentrate sufficient combat power to accomplish the mission.

This dilemma is dynamic. The degree of risk changes as the distance between opposing forces changes. Initially, maneuver forces will disperse to avoid presenting lucrative targets. As the distance from the enemy decreases, maneuver units will concentrate over multiple routes at the decisive time and place, then disperse again after defeating the enemy.

The tactical plan must also consider the airspace over a unit's area of responsibility. Air and ground movements in support of the commanders' scheme of maneuver must be coordinated with the Air Force, Army aviation, air defense units, and ground maneuver units.

Effective tactical planning is the best way to assure synchronization in execution. Usually, the more effective the plan, the less synchronization will be hostage to active command and control once operations begin.

Once committed to combat, however, commanders must be prepared to modify their actions to fit the situation. This requires balance and judgment. Commanders should not abandon their plans too readily, thus forfeiting the coordination their plans represent. Under the pressures of combat—uncertainty, unexpected events, and great violence—commanders must rely on their initial estimate and resist the temptation to change their plans at the first difficulty.

At the same time, even the most farsighted plan will have to be adjusted to accommodate changes at some point. Commanders must be able to recognize the critical point. They must also be well-informed about the situation to make this judgment and have the means to react to opportunities or threats without losing synchronization.

Conducting Tactical Operations. AirLand Battle tactical offensives are rapid, violent operations that seek enemy soft spots, rapidly shift the main effort, and exploit successes promptly. The attacker creates a fluid situation, maintains the initiative, and destroys the coherence of the enemy defense. Using supporting and reserve units flexibly, the attack continues for as long as it takes to achieve objectives.

AirLand Battle tactical defenses combine static and dynamic elements. Fires, obstacles, and static elements of the defense stop or contain enemy movement. Delays and counterattacks slow and defeat segments of the attacking force. Deep and rear operations extend tactical opportunities and preserve freedom of action. These actions allow the defender to break the attacker's momentum, to present the attacker with the unexpected, to defeat combined arms cooperation, and to gain the initiative and win.

Tactical commanders will fight the enemy in an *area of operations*, a specific zone or sector assigned to them. But they must also identify and monitor enemy activities outside their areas of operation that could affect their future operations. This larger *area of interest* will vary in size and shape from operation to operation. It should include all enemy activities that might affect the friendly force throughout the duration of the operation in question, and may therefore extend forward, to the flanks, and to the rear of the area of operations. Commanders plan actions against enemy forces behind and beyond their forward line of own troops (FLOT) as part of tactical operations. Both deep and rear operations may require the reconnaissance and strike support of higher echelons of command and, frequently, of their supporting aerial forces.

At the tactical level, the commander structures close operations with maneuver, fires, and obstacles to concentrate superior combat power on the enemy's flanks and rear. Whether attacking or defending, tactical commanders fight a unified battle against the enemy's committed forces and forces in depth and preserve their own freedom of action in the rear area.

Close operations. Close operations involve the fight between the committed forces and the readily available tactical reserves of both combatants. Its principal elements are the coordinated plans for maneuver and fire support. These elements, however, rely on the integrated support of all other arms and services.

At the tactical level, corps and smaller units maneuver to attack the enemy's flanks, rear, or supporting formations. By doing so, they sustain the initiative, exploit success, and reduce their own vulnerability. Usually supported by direct and indirect fires, tactical commanders maneuver to obtain a local position of advantage. Often part of the maneuvering force of battalion size or smaller provides fire to support movements of other parts. Once it comes into contact with the enemy, such a maneuvering force advances using fire and movement. In using fire and movement, one element of an engaged force adds its suppressive direct fires to the supporting indirect fires of mortars, artillery, naval guns, or close air support. This firepower makes movement by another element possible. A force may close with the enemy by alternating its elements between fire and movement.

In tactical operations, commanders assign the main effort to one of their subordinate elements. Commanders support the main effort with every asset available and strive to throw the enemy off-balance by striking at enemy vulnerabilities that they create as the enemy uncovers. If the main effort does not succeed, tactical commanders from corps to company level must rapidly be able to shift the orientation of the main effort or shift the main effort to another unit. The same action must be pursued if in the course of the fight an unanticipated enemy vulnerability develops.

To remain flexible, tactical commanders need to retain a reserve and operate from appropriate formations. They should also provide for likely contingencies by identifying supporting attacks, exploitation axes, counterattack plans, and defensive positions in depth or on flanks as "on-order" tasks. Such supplementary actions should be shown on tactical overlays, supported with planned fires, and, when possible, with obstacles. In smaller units, battle drills provide this flexibility. In brigades, divisions, and corps, though, supplementary control measures and contingency plans make it possible.

Deep operations. Commanders support their basic scheme of maneuver with deep operations against specific enemy forces in depth that threaten success. In either attack or defense, well-timed deep operations against enemy forces not yet in contact are necessary. Successful deep operations limit the enemy's freedom of action, alter the tempo of operations in favor of the friendly force, and isolate the close fight on advantageous terms. Deep operations are an integral part of the overall plan; they selectively attack vulnerable enemy forces and facilities as a synchronized part of the unified tactical effort. Divisional brigades and smaller tactical units do not usually conduct separate deep operations. But their tactical planning and operations must anticipate the arrival of enemy follow-on forces and prevent surprise through normal security measures forward. Planning and operations also must deceive the enemy as to the best time and place to commit those follow-on forces.

At each appropriate level of command, deep operations must be based on a careful analysis of enemy capabilities to interfere with current and planned operations. Only those enemy forces that threaten the conduct of friendly operations are relevant. Of those that are relevant, priority should be given to those targets vulnerable to interdiction that are most critical to the enemy's operations. A thorough intelligence preparation of the battlefield (IPB) and timely intelligence from organic and supporting sources help to identify targets whose loss or damage will most diminish the enemy's ability to concentrate forces, to control operations, or to support the battle at critical times.

To conduct deep operations successfully, the fire support coordinator, the operations office (G3), and the intelligence officer (G2) must pay close and continuous attention to the unit's area of interest. The size of the area of interest will vary with the mission, terrain, and mobility of the enemy. Areas of interest include territory adjacent to and beyond a unit's area of operations. They extend to any area from which enemy forces may be capable of affecting a particular friendly forces' operation. Commanders develop areas of interest to support their specific operations. A division commander, for example, should anticipate the enemy's ability to influence the operation and the divisions' own requirements for future operations to define the area of interest.

Named areas of interest (NAI), covering routes or avenues of approach, directions of enemy movement, and specific enemy units are the critical points in an area of interest. They focus the intelligence collection effort and the fires of a unit during the battle. Corps or divisions may restrict the fires of adjacent, supporting, or subordinate units by a variety of control measures. Close coordination between levels of command is necessary to assure that deep operations plans support the overall concept of operations and neither duplicate nor impede each other.

The corps area of interest overlaps those of its divisions just as the division's area of interest and deep actions overlay those of its brigades. Each level of command conducts deep operations simultaneously. In many instances, enemy units will concern both superior and subordinate commanders. For example, both corps and divisions may follow the second echelon divisions of an enemy army.

Commanders may prohibit the engagement of particular forces or physical targets in a subordinate's area of operation if it is to their advantage to allow the unimpeded movement of the enemy in certain areas. Or this may be done to prevent the destruction of a facility. In some cases, corps or division commanders may limit their subordinates' responsibilities to close actions and reserve all actions in depth for themselves. Ordinarily, however, all appropriate levels of command will fight in depth.

Corps and larger units have access to service and national intelligence collection means that directly support the planning and conduct of deep operations. Divisions, separate brigades, and regiments must depend more heavily on intelligence obtained by higher levels of command for their operations in depth.

Commanders attack critical targets in depth with organic and supporting weapons. Long-range weapons will be relatively scarece. Consequently, they should be used against targets whose loss or disruption will yield the greatest benefit to current and anticipated close operations. The primary strike assets for deep attack are aerial, artillery, and missile weapons. However, conventional and unconventional ground and air maneuver units can also interdict enemy movement and neutralize key facilities in depth. Tactical electronic warfare systems can be used instead of fire support to attack enemy command and control of follow-on forces. If their use were authorized, nuclear weapons would be particularly effective in engaging follow-on formations or forces in depth because of their inherent power and because of reduced risk to friendly troops. Deception also plays a part in delaying, disrupting, and diverting an enemy and in frustrating the enemy's plans for committing follow-on forces.

Target development is an intelligence activity that supports the commanders' efforts to identify, locate, and strike high-value targets—key enemy forces, facilities, or assets—as part of their deep operations plan. To assess target value, candidate targets must be evaluated using tactically meaningful criteria. High-value targets are those that are:

- Relevant to the overall operation planned or in progress, in that they can affect the force's ability to perform the mission.
- Most threatening to accomplishment of the mission. Since not all relevant targets can be dealt with, they must be put in priority order.
- Most damaging to the coherence of enemy operations. Among relevant and threatening targets, these are the targets of choice.

Intelligence officers develop basic target information, then employ intelligence, surveillance, and target-acquisition assets to locate targets accurately enough for attack. Following such attacks, intelligence officers assess their effects and monitor the target to assure that the commander's intention has been carried out.

Only in rare cases will commanders be able to destroy enemy forces in depth. However, they will often be able to delay, disrupt, or divert selected enemy forces by destroying portions of those forces, by interrupting their support, or by creating obstacles in depth. To obtain the desired tactical result, these efforts must be synchronized with the overall operation.

In the offense, deep operations initially isolate, immobilize, and weaken defenders in depth. As the attack continues, actions against deep targets sustain momentum by preventing the reorganization of coherent defenses, by blocking the movement of enemy reserves, and by preventing the escape of defending units. In the defense, the commander uses deep actions to prevent the enemy from concentrating overwhelming combat power at the time and place of the enemy's choice. The major objectives may be to separate and disrupt attacking echelons, to protect the defender's maneuver, or to degrade the enemy's fire support, command and control, communications, combat support, and combat service support.

Deep operations open opportunities for decisive action by reducing the enemy's closure rate or coordination. They create periods of friendly local superiority in which to win battles or engagements. If the enemy is prevented from reinforcing committed forces at a critical time, the enemy may be defeated in detail.

Rear operations. Operations in the rear area contribute to the unified battle plan by preserving the commander's freedom of action and assuring uninterrupted support of the battle. They are, in effect, the defense against the enemy's deep operations.

The commander's concept for rear operations stresses security of all rear area activities and facilities. The demands of the overall battle determine the priorities for the rear operations. Routes needed by reserves and the reserves themselves, air bases and fire support, and combat support and combat service support units whose assistance to the main effort is vital should receive the highest priority for protection in the rear area. Certain key facilities or such features as traffic chokepoints, tunnels and bridges, ammunition and fuel storage points, and dams may also require special protection. Air defense and security against ground attack are equally important; both must be carefully planned. Most crucial will be the establishment of a reliable system for gauging and monitoring the true situation in the rear.

To concentrate protective efforts on key units, features, and facilities, the commander will have to accept risks elsewhere. Rear area installations that do not contribute immediate or continuous support to tactical operations should be expected to defend themselves against all but the greatest threats during the critical period of the battle.

Rearward security will require the commander to balance a variety of competing risks. For example, clustering of support activities reduces their vulnerability to ground attack but can increase their vulnerability to air, missile, or nuclear/chemical attack. Likewise, locating key facilities away from high-speed routes minimizes their vulnerability to enemy ground penetrations but may also reduce their accessibility to units requiring support. And dispersal of critical stocks—fuel, ammunition, and spares—reduces the risks of loss but also reduces the ease and speed of distribution. The commander must therefore continually reassess the enemy threat to the rear and adjust rear operations as that threat and the tactical situation change.

Because of the threats of air strikes, air assault, guerrilla action, the interference of infiltrators, or penetrating enemy forces, all units in the rear area should have plans to defend themselves and to move if necessary. Scatterable mines, fires, and tree blow-down will impede the movement of reserves, artillery units, and engineers unless key routes are scouted periodically. Alternate routes should be planned for units whose movement is vital to the commander's plan.

The placement of reserves, air defense artillery (ADA) units, engineers, cavalry, military police (MP), field artillery, and command posts all require special attention. All may have key roles in the battle to retain freedom of action in the rear area.

Army aviation units as the most mobile forces available may have to be used to counter rear area threats—particularly air landings and penetrations of high-speed forward detachments. However, commitment of aviation units, artillery forces, or the reserve forces to the rear battle will almost invariably come at the expense of the main effort. The intent of enemy deep operations may be precisely to divert attention and effort away from the point of decision at a crucial time. Accordingly, as much as possible, other forces, especially MPs, should be used in preference to forces committed to or projected for use in the close fight.

Dangerous approaches to the rear and potential landing zones can be obstructed before battle. They can also be observed and guarded by small forces during battle or avoided when the rear area is organized. Field Manual (FM) 90-14, *Rear Battle*, provides specific details.

Major Functional Areas

To be effective, the operations of all units must be coordinated combined arms actions. Assets available to support operations vary with the level of command, the type of force, and the supporting forces available. In most cases, however, commanders at both operational and tactical levels must coordinate the following functions:

- Maneuver.
- Conventional, nuclear, and chemical fires.
- Intelligence.
- Tactical air operations.
- Joint suppression of enemy air defense.
- Engineer support.
- Air defense.
- Communications.
- Airspace coordination.
- Deception.
- Electronic warfare.
- Reconstitution.
- Psychological operations.
- Amphibious operations.
- Special operating forces.
- Civil-military operations.
- Logistic.

The combat and combat support arms of the Army, joined by tactical air forces, routinely cooperate in combined arms operations. Commanders must understand the basic capabilities of each arm as well as the complementary and reinforcing effects of combined arms to apply AirLand Battle doctrine.

Maneuver. Maneuver and firepower are inseparable and complementary elements of combat. Although one might dominate a phase of the battle, the coordinated use of both characterizes all operations. Their joint use makes the destruction of larger enemy forces feasible and enhances the protection of a friendly force. When nuclear weapons are available for use, maneuver may mainly exploit the effects of fire.

Maneuver units may be task-organized for a particular mission to improve their combined arms capabilities. Battalions and companies usually perform a single function in their parent unit's plan whatever their organization. They defend, attack, or delay in cooperation with other battalions and companies. These units support their maneuver with their own mortars. They also receive fire support from field artillery units as well as the support of engineers, chemical units, electronic warfare units, and Army aviation in some cases.

Divisions and brigades combine the efforts of their own units with the support they receive from higher echelons of command in their tactical operations. They fight combined arms battles and engagements employing every tactical means available. Different kinds of maneuver battalions, field artillery, aviation, engineers, ADA, tactical air support, and sometimes naval fire support are integrated in support of brigade and division actions. Thus, organic and supporting combat, combat support, and combat service support units all combine to make vital complementary and supplementary contributions to these operations.

Corps combine arms in a similar fashion. They employ different types of divisions, separate brigades, and cavalry regiments in complementary ways. They arrange combat support and combat service support and integrate the support of other services to perform their missions. Basic types of maneuver units are discussed in the following paragraphs.

Light infantry. Light infantry can operate effectively in most terrain and weather.

9x bns in each light infantry div

Light infantry may be the dominant arm in low-intensity conflicts, particularly given their rapid strategic deployability. In such cases, they can take the initiative from light regular forces and insurgents by fighting them on equal terms. Heavier or more mobile units can support light infantry in large battles or engagements. In operations where armored forces predominate, light infantry units can:

- Capitalize on such natural obstacles as wetlands, forests, and mountains, and occupy strongpoints in close terrain as pivots for operational- and tactical-level maneuver.
- Make initial penetrations in difficult terrain for exploitations by armor and mechanized infantry (mech inf).
- Attack over approaches that are not feasible for heavy forces.
- Capture or defend forested and built-up areas.
- Control restrictive routes for use by other forces.
- Follow and support exploiting heavy forces when augmented with transportation.
- Conduct rear area operations, capitalizing on air mobility.

In operations in which light forces predominate, airborne (abn), airmobile, or other light infantry lead the combined arms attack, and all other arms support the infantry.

Mechanized infantry. Mechanized infantry complements armor through its ability to seize and hold ground. It provides overwatching antitank fires and suppresses enemy infantry and antitank guided missile elements. Infantrymen can dismount to:

- Patrol difficult terrain.
- Clear or to emplace obstacles and minefields.
- Infiltrate and attack enemy positions.
- Protect tanks in urban and wooded areas and in limited-visibility conditions.

5x mech inf bns in each mech inf div
4x mech inf bns in each armored div
1x mech inf bn in each inf div

Mechanized infantry have the same mobility as tankers but less firepower and protection. Armor and mechanized infantry must perform as a team to defeat enemy armored forces. When equipped with infantry fighting vehicles, the mechanized infantry can accompany tanks in mounted assault. However, care must be taken in determining when and where infantry must dismount to perform their mission. In the attack, such infantrymen can act as fixing forces. In the defense, they act as pivot points for maneuvering tank-heavy forces.

Motorized infantry. Motorized infantry is more rapidly deployable than mechanized infantry, but more capable than light infantry of meeting and defeating heavy forces in open terrain. Motorized infantry derives its combat power from rapid ground mobility, heavy firepower, and superior command and control. It lacks the armor protection to survive against heavy forces in conditions where the terrain precludes rapid maneuver and affords little cover and concealment.

In conditions favoring its employment, motorized infantry can:

- Attack and destroy enemy forces in open terrain.
- Envelop or infiltrate weakly held enemy positions and attack vital assets in their rear.
- Exploit penetrations of stronger positions by heavier forces.
- Pursue and destroy retreating enemy forces.
- React rapidly to locate and destroy enemy forces operating in friendly rear areas.
- Dismount and fight as light infantry if necessary.

Armor. In mounted warfare, the tank is the primary offensive weapon. Its firepower, protection from enemy fire, and speed create the shock effect necessary to disrupt the enemy's operations and to defeat the enemy.

6x bns in armored div
5x bns in mech inf div
1x bn in inf div

Tanks can destroy enemy armored vehicles, infantry, and antitank guided missile units. Tanks can break through suppressed defenses, exploit the success of an attack by striking deep into the enemy's rear areas, and pursue defeated enemy forces. Armored units can also blunt enemy attacks and launch counterattacks as part of a defense.

Armored units have several significant limitations. They are vulnerable in such close terrain as forests and cities, and in limited-visibility conditions. They cannot cross most rivers and swamps without bridging, and they require substantial logistical support. Armor units are also slow to deploy strategically because their weight and amount of equipment require deployment by sea.

Cavalry. The basic tasks of cavalry units are reconnaissance and security. The ability of armored cavalry units to find the enemy, to develop the situation, and to provide the commander with reaction time and security also make them ideal for economy-of-force missions. Cavalry forces can delay an attacking enemy as well as assist in a withdrawal. When they are equipped or reinforced with tanks, cavalry units are also capable of attacking and defending, although these are not their normal missions.

Cavalry squadron organic to each div
Cavalry regiment organic to each corps

Aviation. Three types of Army aviation units participate in combined arms operations: attack helicopters, air cavalry, and combat support aviation. Speed of movement, freedom from the effects of ground obstacles, and sensitivity to weather conditions characterize all aviation operations.

Attack helicopters are organic to each div.
Air cavalry is organic to each light div.
Combat support aviation is a corps level asset except for 101st Abn Div (AASLT).

In today's Army, though aviation is relegated largely to support of ground maneuver, it increasingly offers opportunities for actual maneuver by air. Thus, attack helicopter units provide highly maneuverable antiarmor firepower. They use natural cover and speed to compensate for their vulnerabilities. They are ideally suited for situations in which rapid reaction time is important or terrain restricts ground forces. Attack helicopters are best suited for attacking moving enemy armor formations. Attack helicopter units:

- Overwatch ground maneuver forces with antitank fires.
- Attack the flanks and rear of attacking or withdrawing enemy formations.
- Counterattack enemy penetrations alone or in support of ground maneuver units.
- Conduct raids in enemy-held territory.
- Dominate key terrain by fire in support of ground maneuver forces.
- Engage enemy helicopters and close support aircraft.

Working alone or in conjunction with tactical aircraft, attack helicopters can defeat enemy armored formations. To be most effective, however, such missions require other combined arms elements to suppress enemy air defense.

Air cavalry units perform the same missions of reconnaissance and security as ground cavalry and are organic to all cavalry units. Because of their greater mobility, air cavalry troops can reconnoiter and maintain surveillance over a much larger area in a shorter period of time than ground troops can. During security operations, air cavalry reconnoiters, screens forward and to the flanks of moving ground forces, and acts as a rapid reaction force.

Combat support aviation gives dismounted infantry and ground antitank units an air assault capability. This capacity enables them to move rapidly to the enemy's flanks or rear or to reposition them rapidly in the defense. Combat support aviation can quickly move towed field artillery units and other lighter elements of the combined arms terms as the commander dictates. It can also provide critical combat service support to forward areas in the defense and to attacking formations when ground lines of communication have been interdicted or overloaded.

Conventional, Nuclear, and Chemical Fires. Fire support includes mortars, field artillery, naval gunfire, army aviation, and air-delivered weapons. The long range and great flexibility of the fire support system make it possible to shift the focus and concentration of fire support rapidly over wide ranges. Commanders can use it to support schemes of maneuver, to mass firepower rapidly without shifting maneuver forces, and to delay, to disrupt, or to destroy enemy forces in depth. Commanders use the fire support system to destroy, neutralize, or suppress surface targets including enemy weapons, formations or facilities, and fires from the enemy's rear. They also employ it to suppress enemy air defense and, upon approval by national command authorities (NCA), to execute nuclear packages as indicated by higher headquarters. In a large-scale nuclear conflict, fire support could become the principal means of destroying enemy forces. The scheme of maneuver would then be designed specifically to exploit the effects of the fire support.

Field artillery (conventional). The principal fire support element in fire and maneuver is the field artillery (FA). It not only provides conventional, nuclear, or chemical fires with cannon, rocket, and missile systems; but it also integrates all means of fire support available to the commander. Field artillery is capable of suppressing enemy direct fire forces, attacking enemy artillery and mortars, and delivering scatterable mines to isolate and to interdict enemy forces. Also, FA is used to protect friendly operations. It contributes to deep operations by delaying or disrupting enemy forces in depth and by suppressing enemy air defense systems to facilitate Army and Air Force air operations. The artillery can also screen operations with smoke or illuminate the battlefield. Normally as mobile as the maneuver force it supports, field artillery can provide continuous fire in support of the commander's scheme of maneuver.

3x direct support bns to each div artillery
1x general support bn to each heavy div artillery
Artillery bdes organic to corps artillery

The commander exercises overall direction of the fire support system. Its weapons—mortars, guns, howitzers, rockets, guided missiles, and applicable tactical aircraft—are coordinated through a network of fire support teams, liaison parties, fire direction centers, and fire support elements. The commander uses this network to mass fires against area targets or to direct fires against point targets.

Fire support must be integrated with the unit's scheme of maneuver and its surveillance and target-acquisition efforts. The fire support system must be flexible enough to supply conventional fires without interruption as the tactical situation changes.

Commanders at all levels are responsible for integrating fire support into their plans. Corps and division commanders who command their own artillery employ their artillery commanders as fire support coordinators. Supporting artillery units provide commanders below division level with fire support officers. At all levels, fire support elements are capable of coordinating all the fire support necessary to the commanders' plans. Air Force and Navy liaison teams at all levels down to battalion assist in coordinating fires provided by their respective services.

In integrating fire support into operations, the most important considerations are adequacy, flexibility, and continuity. In offensive operations, the main attack gets priority fire support while long-range systems strike defenses in depth, enemy reserves, or such targets as command posts, bridges, and defiles. In the defense, a broader balance of fire support is necessary, but the main effort is still allocated stronger fire support. Priority of support should change automatically when commanders shift their main effort.

When maneuver forces have such missions as raids, deep attacks, or covering force operations, that take them beyond supporting distance of the main body, commanders must make special provision for their fire support. This may be provided by direct support field artillery battalions, dedicated batteries, or mortar support, depending on the size of the force and its missions.

Commanders must also make special provisions for foreseeable contingencies or phases of a maneuver operation. These may include:

- Time-on-target attacks of ambush areas in coordination with direct fires and a particular obstacle.
- Obscuration of open areas with smoke to facilitate ground maneuver.
- Suppression of enemy air defense (SEAD) fires in conjunction with attack helicopter, close air support, or joint air attack team operations.
- Final protective fires around a defensive position.
- Interdiction of a specific follow-on unit to complete an attack in progress.

Commanders also ensure flexibility by:

- Holding some of their artillery in general support.
- Giving artillery units on-order missions that orient them on likely contingencies.
- Reserving some of the distributed close-air-support (CAS) missions for the force commander's use.

Commanders ensure continuous support by designating routes for artillery units and by planning air movement of weapons and ammunition. When rapid offensive progress occurs or defensive counterstrokes are planned beyond the FLOT, commanders must ensure that artillery units are in position to support the maneuver.

The large number of targets acquired during combat requires that commanders establish priorities. They can express these priorities in allocating assets, in positioning fire support units, in constraining ammunition expenditure, or in focusing the attack on specified types of targets. Commanders will also control fires by using standard control measures. Specific details of fire support planning and coordination are in FM 6-20, *Fire Support in Combined Arms Operations*.

Fire support of offensive maneuver using Army aviation assets poses unique planning and control problems. Because of the tempo of such operations, special provision must be made to assure artillery coverage of air assault targets. Typically, close air support and attack helicopters will have to furnish initial fire support until surface artillery is able to move into range. Even then, artillery coverage is apt to be limited and control measures must allow for the effective integration of ground and air fires.

Nuclear weapons. Nuclear fires may be delivered by aircraft, missiles, or cannon. A decision to use nuclear weapons would be based on strategic considerations at the highest policy levels. The authority to use nuclear weapons will be conveyed from the NCA through the operational chain of command. Even after authority is granted for employment of nuclear weapons, employment will be guided by strategic purposes more than by tactical effect. Accordingly, nuclear fire planning is subject to unique considerations.

All artillery 155-mm or greater are nuclear capable.
Lance and Pershing II are nuclear capable.

First, far more than conventional fire planning, nuclear fire planning will require a high level of anticipation. Typically, nuclear packages grouping a specified number of weapons having specified delivery system/yield characteristics will be preplanned for use against designated target categories. Such packages are designed to achieve varying military effects, and thereby furnish NCA and theater commanders a range of options through which to achieve desired strategic results.

Because of this high degree of preplanning, effective weapons employment will require continuous refinement of package targeting before and after release of weapons. Release will be predicated on a high confidence that the effects achieved will be precisely those intended—no more, no less. Commanders of delivery units must ensure that all supporting activities—target acquisition, special ammunition distribution, nuclear control personnel and equipment, and operational security—are maintained continuously in a high state of readiness to execute on relatively short notice. This must be done with minimum degradation of conventional fire support and without an abrupt and detectable shift in operating pattern.

Finally, nuclear planning must of course reflect the constraints and directives of higher authority to include procedures for warning friendly units, restrictions on collateral damage, and responsibilities for post-strike analysis. Special care must be taken not to create obstacles to friendly maneuver through the use of nuclear fire. Friendly aircraft of all services must be warned to avoid areas scheduled for nuclear strikes. The echelon that requests nuclear weapons should coordinate warning procedures to friendly forces through the theater commander in chief (CINC) or joint force commander (JFC).

In general, preferred targets might be:

- Enemy nuclear delivery systems.
- Key command and control elements.
- Support forces in the rear of committed elements.
- Follow-on or deep-echeloned forces.
- Reserves.

Divisions and corps will develop packages for possible use in their areas of operations based on the above criteria and their particular situations. Each echelon of command will review its subordinate echelons' nuclear fire plans and will integrate them into its own plans. Plans at all echelons will be developed to permit but not depend upon nuclear weapons employment.

Chemical weapons. United States policy prohibits the first use of lethal or incapacitating chemical munitions. However, because the United States has reserved the right to retaliate if enemies use chemical weapons, Army units must be prepared to conduct offensive chemical operations. Such preparation acts as a deterrent to enemy use of chemicals. Only the NCA can grant authority to employ chemical munitions. When granted, such authority will also provide specific guidance governing their use. Although the use of chemical weapons does not bear the enormous strategic risks associated with nuclear weapons, it can equally alter the course of operations in a theater significantly.

Commanders must be prepared to integrate chemical weapons into their fire plans on receipt of chemical release. Because the chemical expenditure rates necessary to produce a significant effect on a well-trained, well-equipped enemy are high, commanders must carefully consider how chemical weapons will affect their own operations and logistics.

Chemical agents are either persistent or nonpersistent. When properly employed in mass and without warning, chemical fires can:

- Cause high casualties among poorly trained or poorly equipped troops.
- Degrade the effectiveness of weapons, vehicles, and command posts by causing their operators to wear protective equipment.
- Restrict the use of weapons, supplies, and equipment by contamination.
- Disrupt rear area operations and troop movement.
- Enhance the effects of other fire support by slowing enemy movement.
- Reduce the speed, cohesion, and freedom of movement of enemy formations.
- Restrict or deny the use of key terrain.
- Force the enemy to undertake decontamination operations, thereby producing fresh targets for chemical or other fire support means.

Intelligence. Intelligence operations are the organized efforts of a commander to gather information on terrain, weather, and the enemy. Obtaining useful intelligence before the initiation of operations is a vital task. Assembling an accurate picture of the battlefield requires centralized direction, simultaneous action at all levels of command, and timely distribution of information throughout the command. Intelligence operations usually begin before a tactical operation and continue as the battle develops. Intelligence operations may employ any of the unit's resources—units in contact with the enemy, cavalry units, patrols, electronic warfare units, field artillery radars—and they routinely rely on higher levels of command for intelligence support. Local population and government agencies also add to the intelligence picture.

A combat electronic warfare and intelligence bn is organic to each div.

A combat electronic and intelligence bde is organic to each corps.

Commanders provide direction for the intelligence effort by articulating the priority intelligence requirements (PIR) and information requirements (IR) needed in the decisionmaking process. To ensure that intelligence provides the basis for timely tactical decisions, commanders must plan and control intelligence operations with the same level of interest and personal involvement that they devote to combat operations. In particular, they must assure that intelligence is distributed to meet their subordinates' needs.

The intelligence officer (G2 or S2) must inform the commander and all others concerned regarding the enemy situation and capabilities, terrain, and weather. The intelligence officer:

- Conducts continuous intelligence preparation of the battlefield (IPB).
- Directs intelligence-collection activities.
- Assesses their results.
- Refines the requirements for further collecting efforts.
- Develops targets.
- Provides OPSEC information to the G3.

The G2s or the S2s convert the commander's PIR and IR into specific missions for available collection resources. They direct the evaluation and interpretation of information collected from all sources, and direct the timely dissemination of intelligence and combat information to the concerned units.

Tactical commanders focus their intelligence operations within both their areas of operation and their larger area of interest. The IPB should start well before combat operations begin. It is a continuous, integrated, and comprehensive analysis of the effects of enemy capabilities, terrain, and weather on operations. The IPB should extend throughout a unit's entire area of interest, focusing on specific units or NAI designated by the commander. It includes forward and rear areas as well as adjacent terrain. Using overlays, graphic displays, and templating techniques, the IPB process increases the accuracy and timeliness of the intelligence available to the commander.

Tactical Air Operations. The first consideration in employing air forces is gaining and maintaining the freedom of action to conduct operations against the enemy. Control of the air environment gives commanders the freedom to conduct successful attacks that can neutralize or destroy an enemy's warfighting potential. This campaign for control is a continuous attempt to gain and maintain the capability to use the enemy's airspace to perform combat missions and to deny the enemy the use of friendly airspace. Control of the air environment enables land forces to carry out a plan of action without interference from an enemy's air forces. Without this control, tactical flexibility is lost.

Integrated strategic, operational, and tactical actions produce a cumulative effect on the enemy's ability to wage war. Successful strategic attacks directed against the heartland will normally produce direct effects on an enemy nation or alliance. Their impact on the military forces engaged in tactical action, however, may be delayed because of the inherent momentum of forces actively engaged in combat and those reserve forces ready to enter the action. Consequently, an air commander must exploit the devastating firepower of air power to disrupt that momentum and place an enemy's land forces at risk. Air forces must attack not only those enemy forces in contact, but enemy forces held in reserve or rear echelons as well.

The strengths of the enemy in terms of forces, battle sustaining supplies, and combat reserves are most vulnerable to air attack when concentrated. But, these targets may be relatively secure when dispersed in their battle areas. Although the urgency of enemy actions may require direct attacks against forces in contact, air forces are usually more efficiently used to attack in depth those targets whose destruction, disruption, or delay will deny the enemy the time and space to employ forces effectively. The effect of these attacks is greatest when the enemy is engaged in a highly mobile, maneuver scheme of operation dependent on urgent resupply of combat reserves and consumables. A systematic and persistent plan of attack produces a connected series of actions and reactions that are closely coordinated between air and land commanders. Although battlefield situations may interrupt this plan of attack, air and land commanders must remain committed to their coordinated actions and must not allow the impact of air power to be diverted away from the main objective.

The success of both offensive and defensive operations can depend greatly on massing air power at decisive points. Effective actions to gain air superiority and to interdict an enemy can limit the flexibility of the enemy's forces and deny reinforcements. These actions also enhance opportunities for friendly commanders to seize the initiative through counteroffensive action. Close air support can enhance counteroffensive actions by creating opportunities to break through enemy lines, protecting the flanks of a penetration, or preventing the countermaneuver of enemy surface forces. Defensive requirements to blunt an enemy offensive may also dictate the need for close air support. Close air support can protect the maneuver and withdrawal of land forces, protect rear area movements, or create avenues of escape.

Adequate resources are required to defend friendly airspace. Restricting such defense to aircraft on ground alert or orbiting on airborne alert, both increases the vulnerability of these aircraft and concedes air initiative to the enemy.

US forces cannot count on unchallenged air superiority. Enemy air forces will contest control of the air, and our operations are likely to be conducted under temporary or local air superiority, air parity, or even enemy domination.

Enemy air can quickly mass attacks that can preoccupy the defense's attentions and actions, even to the extent of restricting friendly ground forces primarily to defensive actions. When air forces are primarily reactive, an air commander can reverse this disadvantage only by taking offensive actions that will compel an enemy to react rather than initiate. Offensive air action denies the enemy the flexibility to concentrate air effort, and it gives to friendly forces the flexibility, initiative, and opportunity to control the timing and tempo of action.

Tactical air force missions that contribute most directly to land operations are counter air, air interdiction, close air support, special operations, airlift, and surveillance and reconnaissance. All counter air systems must be integrated to preclude the attack of friendly aircraft and to engage hostile aircraft. The theater air commanders are normally the area counter air operations commanders. They integrate all units pertaining to counter air operations and establish counter air rules of engagement and procedures for the theater. Control of theater counter air operations will usually be exercised through a control and reporting center (CRC).

The objective of counter air operations is to gain control of the air environment. Counter air operations protect friendly forces, ensure our freedom to use the aerospace environment to perform other air missions and tasks, and deny the use of that environment to the enemy. The ultimate goal of counter air is air supremacy. There are three types of complementary and mutual supportive operations that are conducted to establish and maintain air superiority.

Offensive counter air (OCA) operations are conducted to seek out and neutralize or destroy enemy air forces at a time and place of our choosing. OCA achieves this by seizing the offensive at the initiation of hostilities, conducting operations in the enemy's airspace, and neutralizing or destroying the enemy's air forces and the infrastructure supporting enemy air operations. Suppression of enemy air defenses (SEAD) neutralizes, destroys, or temporarily degrades enemy air defensive systems in a specific area by physical/electronic attack. The goal of SEAD operations is to allow friendly forces to perform their other missions effectively without interference from enemy air defenses.

Defensive counter air (DCA) missions are conducted to detect, identify, intercept, and destroy enemy air forces that are attempting to attack friendly forces or penetrate friendly airspace. These missions defend friendly lines of communications, protect friendly bases, and support friendly land forces while denying the enemy the freedom to carry out offensive operations.

Air interdiction (AI) operations delay, disrupt, divert, or destroy an enemy's military potential before it can be brought to bear effectively against friendly forces. These combat operations are performed at such distances from friendly surface forces that detailed integration of specific actions with the fire and movement of friendly forces is normally not required. Air interdiction attacks are usually executed against enemy surface forces, movement networks (including lines of communications), command, control, and communications networks, and combat supplies. Interdiction of the enemy can delay the arrival or buildup of forces and supplies, disrupt the enemy's scheme of operation and control of forces, divert valuable enemy resources to other uses, and destroy forces and supplies.

Air interdiction attacks are usually executed by an air commander as part of a systematic and persistent effort. An air interdiction effort is developed to limit the enemy's mobility to maneuver forces, while forcing the enemy into high rates of consumption. At the same time, creating opportunities for friendly forces to exploit the disabilities produced by interdiction attacks. The weight, phasing, and, most important, the timing of interdiction attacks can provide friendly forces the time or opportunity to seize the initiative and deny that same opportunity to an enemy.

Air interdiction attacks against targets that have a near term effect on the operations or scheme of maneuver of friendly forces, but are not in close proximity to friendly forces, are referred to as battlefield air interdiction (BAI). The primary difference between BAI and the remainder of the air interdiction effort is the near term effect and influence produced against the enemy in support of the land component commander's scheme of maneuver. Battlefield air interdiction attacks require joint coordination at the component level during planning and may require coordination during execution. The air component commander executes BAI as an integral part of a total air interdiction effort.

Close-air-support missions support land operations by attacking hostile targets in close proximity to friendly surface forces. Close air support can support offensive, counteroffensive, and defensive surface force operations with preplanned or immediate attacks. All preplanned and immediate close-air-support missions require access to the battlefield, timely intelligence information, and accurate weapons delivery.

Close air support enhances land force operations by providing the capability to deliver a wide range of weapons and massed firepower at decisive points. Close air support can surprise the enemy, create opportunities for the maneuver or advance of friendly forces through shock action and concentrated attacks. Close air support can also protect the flanks of friendly forces, blunt enemy offensives, and protect the rear of land forces during retrograde operations.

Special operations influence the accomplishment of strategic, operational, or tactical objectives through the conduct of low visibility, covert, or clandestine military actions. Special operations are usually conducted in enemy controlled or politically sensitive territories and may complement general purpose force operations. Virtually all air forces have the potential for employment in special operations. To execute special operations, forces are usually organized and employed in small formations capable of both supporting actions and independent operations, with the purpose of providing timely and tailored responses throughout the spectrum of conflict. Special operating forces may conduct/support conventional operations, unconventional warfare, counter-terrorist operations, collective security, psychological operations, and certain rescue operations. In addition, SOFs may conduct/support other mission areas such as interdiction or offsensive counter air operations.

Airlift missions deploy, employ, and support conventional operations and unconventional warfare, and sustain military forces. Airlift is performed in peace and war. In combat, airlift projects power through airdrop, extraction, and airlanding of ground forces and supplies. Through mobility operations, the joint or combined force commander can manuever fighting forces to exploit an enemy's weaknesses. In combat support missions, airlift provides logistics support through the transportation of personnel and equipment. In peacetime, airlift provides the opportunity to enhance national objectives by providing military assistance and supporting civilian relief programs.

Airlift may be performed from a strategic or operational/tactical perspective. Strategic (intertheater) airlift transcends the boundary of any one theater and is executed under the central direction of higher authority. In contrast, operational/tactical (intratheater) airlift is performed within a theater of operations and supports theater objectives through the rapid and responsive movement of personnel and supplies.

Surveillance and reconnaissance missions collect information from airborne, orbital, and surface-based sensors. Air Force and Navy surveillance and reconnaissance efforts are a part of national intelligence gathering and systematic observation process. These operations provide a wide variety of information necessary to the development of national security policy, force postures, planning actions, force employment, and informed responses in times of crisis.

Surveillance operations collect information continuously from the air, land, and sea. Reconnaissance operations are directed toward specific targets. Through surveillance and reconnaissance, varied data can be collected such as meteorological, hydrographic, geographic, electronic, and communications characteristics on any given area of the earth's surface. The products of reconnaissance and surveillance operations have strategic, operational, and tactical applications in both peace and war. Strategic and operational/tactical surveillance and reconnaissance provide timely notification of hostile intent and actions as well as other information vital to the NCA and combat commanders. These operations are instrumental in identifying the composition and capability of hostile and potentially hostile forces. As a result, the total capability of foreign nations to conduct war can be assessed and our forces can be tailored to effectively counter the threat.

Joint Suppression of Enemy Air Defenses. Joint suppression of enemy air defenses (J-SEAD) increases the overall effectiveness of friendly air-land operations. The two types of J-SEAD are "campaign" and "localized."

The theater air commander conducts the theaterwide J-SEAD operation against specific surface-to-air defense systems. The locations of most campaign targets will dictate this. However, Army surface-to-surface weapons will complement these efforts. More than one J-SEAD operation may be necessary during a campaign.

Localized J-SEAD operations attack specific targets or support airborne, airmobile, or other air operations. Battalions and larger Army units plan localized J-SEAD operations to protect friendly aircraft and to maximize the effect of air support. Such operations usually involve jammers, suppressive fires, and such passive measures as camouflage or deception to degrade the effects of enemy air defenses. Localized J-SEAD operations can use field artillery, attack helicopters, direct-fire weapons, and electronic warfare.

Engineer Support. The *engineer system* has three basic purposes: it preserves the freedom of maneuver of friendly forces, it obstructs the maneuver of the enemy in areas where fire and maneuver can be used to destroy enemy forces, and it enhances the survivability of friendly forces with protective construction. Engineer plans must be fully coordinated with the scheme of maneuver and fire support plans. They must allocate units and furnish a clear list of mission priorities. Engineer operations are time and labor intensive. They must begin as early as possible and be flexible enough to change as the battle develops.

Cbt engineer bn organic to each div
Cbt engineer bde organic to each corps

Combat (cbt) engineers contribute to the combined arms team by performing mobility, countermobility, and survivability missions. Mobility missions include breaching enemy minefields and obstacles, improving existing routes or building new ones, and providing bridge and raft support for crossing major water obstacles. Countermobility efforts limit the maneuver of enemy forces and enhance the effectiveness of US fires. Engineers improve the survivability of the friendly force by hardening command and control facilities and key logistic installations and by fortifying battle positions in the defense. In addition, combat engineers are organized, equipped, and trained to fight as infantry in tactical emergencies.

The engineer plan must be coordinated with the plans for maneuver and fires. At maneuver brigades and battalions, the S3 prepares the engineer plan. In divisions and corps, the engineer prepares the engineer plan under the direction of the G3. At all levels, engineer planning must consider the requirements not only for current operations but for future operations as well. For instance, obstacles should be planned not only with current needs in mind but also with regard for the options they provide for future close operations.

Time, equipment, and materials may restrict the amount of engineer work accomplished before and during battle. Engineer plans must reflect these limitations realistically. They must provide the desired balance between survivability, mobility, and countermobility tasks and assign priorities. Usually, they should be concentrated in support of the main effort rather than being distributed evenly throughout the force.

In offensive operations, engineers normally concentrate their efforts in supporting maneuver by:

- Improving and maintaining routes.
- Laying bridges.
- Breaching and removing obstacles.
- Installing protective obstacles to the flanks of the attacking forces.

Some corps engineer units may be attached to or placed under operational control of divisions. Others will operate in direct or general support.

In the defense, engineers reinforce the terrain to anchor the defense in critical areas, to maximize the effects of the defender's fires, and to facilitate the movement of counterattack forces. They also prepare positions and roads or trails for moving reserve, artillery, logistical, and other units.

Denial plans are included in the engineer plan when the commander wishes to prevent or hinder the enemy from occupying or using areas or objects of strategic or tactical value. To the maximum extent possible, all materials of military value to the enemy will be removed or destroyed before retrograde movements.

Maneuver commanders must coordinate their obstacle plans in detail. They must assure that engineers or other designated units destroy or emplace bridges at the proper time, emplace and report flank obstacles, and close gaps left open for friendly maneuver at the right time. All engineer, artillery, and aviation units are responsible for emplacing scatterable mines. Plans must provide for the timely recording of installed obstacles, and key information must be promptly disseminated to all affected units.

Air Defense. Air defense units provide the commander with security from enemy air attack by destroying or driving off enemy close-air-support aircraft and helicopters. Their fires can degrade the effectiveness of enemy strike and reconnaissance aircraft by forcing them to evade friendly air defenses. Short-range air defense (SHORAD) systems usually provide forward air defense protection for maneuver units whether they are attacking, delaying, withdrawing, or repositioning in the defense. Air defense secures such critical facilities as command posts, logistic installations, and special ammunition supply points. It also protects convoys and lines of communications. In conjunction with Air Force elements, Army air defense plays a significant role in protecting friendly air maneuver and in attacking enemy air maneuver units.

Air defense artillery bn is organic to each div.
Air defense artillery bde is organic to each corps.

Corps and divisions have organic SHORAD units. High-to-medium altitude air defense (HIMAD) units may also be assigned or attached to corps when higher echelons are not providing them.

Commanders locate their air defense units to protect high-priority assets, units, and facilities. Priorities must be assessed first in terms of the operational significance of the functions performed by assets, units, and facilities and then by their tactical significance because air defense systems will always be scarce. Priorities vary with each operation but ordinarily include:

- Massed and moving maneuver forces.
- Command posts.
- Logistic facilities.
- Airfields.
- Artillery units.
- Bridges, chokepoints, or defiles along important routes.
- Reserves (especially on the move).
- Forward arming and refueling points.

The unit air defense officer organizes the air defense based on the commander's guidance for each operation. In so doing, the unit air defense officer must consider all available counterair-capable weapons, not merely those specifically dedicated to air defense. Passive defensive measures will also remain important since there will rarely be enough ADA weapons to provide complete protection.

Like field artillery, ADA must provide continuous coverage of protected units during mobile operations. Movements must be carefully planned, firing positions must be cleared with sector or zone commanders, and plans must be flexible enough to accommodate changes. Field Manual 44-1, *US Army Air Defense Artillery Employment*, and Joint Chiefs of Staff Publication 8, *Doctrine for Air Defense from Overseas Land Areas*, contain detailed discussions of air defense operations.

Communications. Reliable communications are the heart of command and control. Gen Omar Bradley once said "Congress can make a general but only communications can make him a commander." It has long been Army doctrine that communications responsibilities go from "higher to lower," from "supporting to supported," and from "left to right."

Commanders should comply with this to the extent possible, but also do what they can to ensure communications are adequate in the other directions. This is essential when working with allies and with the other services.

Signal bn is organic to each div.
Signal bde is organic to each corps.

Signal support plans must be made for each specific operation. Commanders and staffs at all echelons must understand the capabilities and limitations of their systems. They must be actively involved in ensuring adequacy. Atmospheric conditions, terrain, enemy EW efforts, and nuclear electromagnetic pulse (EMP) can all affect electronic signal equipment. The key to survivability is establishing communications procedures that:

- Provide redundancy of communications.
- Eliminate unnecessary reports.
- Ensure that subordinates know what to do during communications interruption.
- Limit the use of electronic communications.
- Minimize use of the most vulnerable means.
- Stress operations security and communications security.

Airspace Coordination. Airspace coordination maximizes joint force effectiveness without hindering the combat power of either service. Friendly aircraft must be able to enter, to depart, and to move within the area of operations free of undue restrictions, while supporting fires and remotely piloted vehicle (RPV) flights continue uninterrupted. The tempo and complexity of modern combat rule out a system that requires time-consuming coordination. To be simple and flexible, our airspace coordination system operates under a concept of management by exception.

Each service is free to operate its aircraft within the theater airspace. Army aircraft at low altitudes operate under the control of the Army Airspace Command and Control (A^2C^2) System. Air Force aircraft at medium and high altitudes operate under control of the Tactical Air Control System. Navy and Marine Corps aircraft may also provide mission support to the force. The boundary between low- and medium-altitude regimes is flexible and situation-dependent. Coordination between services is continuous, but it is especially important when aircraft pass from one regime to another. Generally, Army aircraft operate with fewer restrictions below coordinating altitudes forward of the division rear boundary. Passing information about major movements or high concentrations of fire helps to avoid conflicts.

In practice, Air Force support of strategic and operational plans is flown within airspace procedures established by theater or joint force comanders. These may include aircraft of any service or ally, all using rules and procedures appropriate to operational plans. Aircraft supporting tactical plans (usually Army aviation) will adhere to theaterwide procedures as augmented by the tactical commander being supported. All airspace management rules and procedures will be standardized to the extent possible but will ultimately be applied in a particular theater by operational direction.

The G3 or S3 is responsible for the unit's operation in the A^2C^2 system. The G3 Air or S3 Air ensures that staff elements in the A^2C^2 cell conduct the necessary coordination.

Deception. Any operational plan must seek to achieve surprise. An integral part of any plan of campaign or major operation is the deception plan. During the Normandy operations of World War II (WWII), the Germans believed that a large allied force under Gen George S. Patton would land in the Pas de Calais area long after the beachheads were consolidated on the Normandy coast and refused to move significant reserves to counter the landings until too late. Every successful operation in WWII devoted a significant effort to deception. As the war progressed, the Russians became masters of operational deception.

Deception is a vital part of tactical operations as well. It masks the real objectives of tactical operations and delays effective enemy reaction by misleading the enemy about friendly intentions, capabilities, objectives, and the locations of vulnerable units and facilities. Tactical level deceptions must be coordinated with operational level deception plans so they reinforce rather than cancel each other.

A sound deception plan is simple, believable, and not so costly that it diverts resources from the main effort. Because deception seeks an enemy response, it must be targeted against that enemy commander who has the freedom of action to respond appropriately.

Generally speaking, the most costly, difficult, and least promising form of deception is convincing opponents to alter their intended course of action. It is far easier to convince opponents to believe what they want to believe anyway—that their current course of action is correct. Easiest of all is the creation of ambiguity concerning the friendly force's own intentions—and frequently, that will suffice to create an exploitable weakness.

The G3 assembles the deception plan, making use of every unit and asset available to protect a plausible deception story designed to elicit a specific enemy reaction. The G3 may use combat units; combat electronic warfare and intelligence (CEWI) elements of the signal, support, command, and aviation units; as well as civil affairs staff, and other forces. The deception effort may include demonstrations and ruses as part of offensive or defensive maneuver plans.

A demonstration is a show of force in an area where a decision is not sought; unlike a feint, a demonstration avoids contact with the enemy. Ruses are tricks designed to deceive the enemy by deliberately exposing false information to the collection means. Field Manual 90-2, *Tactical Deception*, provides additional details on deception operations.

Electronic Warfare. Electronic warfare uses the electronic spectrum to deceive the enemy; locate units and facilities; intercept communications; and disrupt command, control, and target acquisition systems at critical moments. Electronic warfare is conducted concurrently at both the operational and tactical levels. These efforts must be synchronized with each other and with other activities—maneuver, fire, and air support—to obtain maximum benefit.

Staff officers have specific responsibilities for EW. The G3s or the S3s have the overall responsibility for EW, but focus their primary effort on offensive EW. They implement the commander's guidance by integrating EW with the rest of the plan. The G2s or S2s develop targets for interception, jamming, or destruction. The communications-electronics officer manages defensive electronic warfare.

The supporting military intelligence unit provides an electronic warfare support element (EWSE) to assist the G3 or the S3 in coordinating EW. The EWSE usually collocates with the fire support element (FSE) to facilitate target acquisition, fire planning, and coordination.

Military intelligence units (CEWI) detect and identify important enemy communications nets and intercept their traffic to provide the commander with intelligence. They also direct electronic countermeasures, primarily jamming, against enemy fire direction, command and control communications, air defense radar, and electronic guidance systems. This capability to locate the enemy, to intercept messages, and to hamper operations at critical periods contributes both directly and indirectly to the effectiveness of combined arms operations.

When developing their concept of operation, tactical commanders should treat EW assets much as they treat artillery assets. They should deploy EW assets to committed units in the light of their missions, the capabilities of available systems, and potential enemy actions. Plans should reflect the relative scarcity of EW weapons, the limitations, and the transient nature of the weapons' effects.

Enemy nets that routinely pass information of intelligence value should be identified and monitored. Those that have high tactical value to the enemy but little or no intelligence value should be attacked with jammers or with fire. Enemy jammers and radars should be located, reported, and destroyed. Guidance for jamming, destroying, or exploiting enemy electronic emitters should be reviewed before each tactical operation.

Jamming should interrupt or disrupt the enemy's communications at decisive moments in the battle—when key information needs to be passed or new instructions are required. Jamming may be effective only for the short periods of time the enemy needs to take evasive action or to execute countermeasures.

Jammers support other combat actions by:

- Disrupting key command and control nets, thus slowing or disorganizing the enemy in critical sections.
- Denying the enemy the ability to react to changes on the battlefield.
- Reducing the effectiveness of enemy fire support and air control nets.
- Denying the enemy the use of air defense fire control nets.
- Disrupting the enemy's flow of critical supplies, such as ammunition and petroleum, oil, and lubricants (POL).

Jammers should be used judiciously and moved often enough to avoid destruction. The G3 or the S3 coordinates the positioning of jammers and other electronic warfare assets.

The G3 or the S3 is also responsible for electronic deception activities. These must be a coordinated part of the overall deception plan and may include imitative communication deception (ICD) and manipulative electronic deception (MED). Imitative communication deception is the controlled entry of an enemy net by operators posing as enemy stations to disrupt the enemy's operations by passing false reports or by confusing the transmission of information and orders. Manipulative electronic deception is the transmission of false information on friendly communications nets to deceive the enemy.

Psychological Operations. Psychological operations (PSYOP) are an important component of the political, military, economic, and ideological actions that support both long-term and immediate objectives. Propaganda and other PSYOP techniques for changing the attitudes and behavior of target groups provide the commander with the primary means of communication with opposing military forces and civilian groups. When effectively integrated with other operations, PSYOP contribute significantly to combat power. They can

1. reduce the combat effectiveness of enemy forces,
2. promote support for friendly forces among local populations and external groups (including in some cases the enemy's own population), and
3. reduce the effectiveness of enemy PSYOP directed toward friendly forces and supporting civilian groups.

PSYOP must be coordinated from the theater to the division level. Based on levels of employment, objectives, and targeted groups, each of the following categories is part of an integrated theater PSYOP effort.

- Strategic PSYOP, conducted to advance broad or long-term objectives and to create a psychological environment favorable to military operations.

- Operational PSYOP, conducted to achieve midterm objectives in support of campaigns and major operations.
- Tactical PSYOP, conducted to achieve relatively immediate and short-term objectives in support of tactical comanders.

At any level, PSYOP may be consolidative, conducted to facilitate military operations, to reduce interference by noncombatants, and to obtain the cooperation of the civilian population in the area of operations. Or it may be divisive, intended to lower the efficiency and fragment the loyalty of military forces that directly oppose the objectives of a command.

The G3 is responsible for integrating psychological and combat operations. The supporting PSYOP unit commander plans and executes PSYOP and usually provides a small PSYOP staff element to the supported G3.

Effective integration of PSYOP is based on the following fundamental principles:

1. Planning should begin early, concurrently with operational planning.
2. PSYOP must begin early in an operation.
3. Scarce resources for conducting PSYOP should be targeted against groups most critical to success.
4. Divisive and consolidative PSYOP conducted at the strategic, operational, and tactical levels of war must be thoroughly coordinated and mutually supportive. PSYOP should also be integrated with operational deception effort.
5. PSYOP units are all part of a PSYOP command to ensure integration and consistency of operations.
6. Psychological operations must respond to the changing requirements of the battlefield.

Amphibious Operations. An amphibious operation is an attack launched from the sea by naval and landing forces against a hostile shore. It may be conducted to:

- Prosecute further land combat operations.
- Obtain a site for advanced bases.
- Deny the use of an area or facilities to the enemy.

An amphibious operation constitutes one of the more potent capabilities available to a theater commander, as the invasions of Normandy and Inchon demonstrated. Its usefulness stems from the mobility and flexibility of the amphibious task force and its potential to achieve surprise. The US Army has a collateral responsibility for planning and executing joint amphibious operations.

An amphibious operation confronts difficulties not usually encountered in land combat operations. These include such natural forces as unfavorable weather, seas, surf, and features of hydrography. Also, there are problems of the logistics involved in loading troops and equipment on ships and aircraft so that they can be landed in the proper sequence on open beaches or landing zones that are contested. In addition are the inherent vulnerabilities of landing forces while embarked on naval vessels and aircraft whose maneuverability is restricted to relatively fixed locations during the actual assault and while conducting ship-to-shore operations. As a result, detailed planning and the closest cooperation among all participating forces in a joint amphibious operation are essential for success.

In addition to direct participation in joint amphibious operations, the Army may also become involved in supporting operations, special operations, or separate operations in conjunction with amphibious operations. These could include:

- Airborne operations to seize air bases for the subsequent introduction of follow-on forces.
- Air-transported operations.
- Isolation of the objective area by interdicting enemy forces.
- Psychological and unconventional warfare operations.

A detailed discussion of amphibious operations is found in FM 31-11, *Doctrine for Amphibious Operations*.

Special Operations Forces. Unconventional warfare (UW), conducted by US Army Special Forces, other special operating forces (SOF), or native insurgents, takes place deep in the enemy's rear area. The US Army Special Forces and other SOF can disrupt the enemy's operations by conducting either unconventional warfare or unilateral operations in the enemy's rear areas. Normally, preestablished command arrangements will determine how the unified commanders assign missions to their SOF. Special forces can also provide support to lower level commanders when their elements are located in such a commander's area of interest.

Unconventional warfare operations in a theater concentrate on strategic and operational goals. They may seek either immediate or long-range effects on the conflict. They include interdicting enemy lines of communications and destroying military and industrial facilities. Special operating forces conduct PSYOP to demoralize the enemy and to collect information in the enemy's rear areas. Ranger units can be used for strike missions of special importance. Special forces organize, train, equip, and advise resistance forces in guerrilla warfare, evasion and escape (E&E), subversion, and sabotage. Their greatest value to commanders of conventional forces is in adding depth to the campaign, forcing the enemy to deploy significant numbers of combat forces to protect the rear area.

Special forces elements can deploy unilaterally into the enemy's rear area to assist in the attack of uncommitted enemy forces by locating, identifying, and destroying targets of operational value. Special forces detachments may have the following missions:

- Intelligence collection.
- Target acquisition.
- Terminal guidance for strike aircraft and missile systems.
- Interdiction of critical transportation targets.
- Destruction of nuclear storage sites and command and control facilities.
- Personnel recovery.

Civil-Military Operations. Commanders must expect to fight in or near populated areas. Such areas contain supplies, facilities, services, and labor resources that US commanders can use to support military operations. Conversely, uncontrolled and uncoordinated movement of civilians about the battlefield, hostile actions by the population, or failure to cooperate with friendly forces can significantly disrupt military operations.

Civil-military operations (CMO) seek to influence the relationship between a military command and the civilian population. They include activities conducted to assist civil authorities and to control the population in the operational area. To obtain the cooperation of the civilian population, CMO integrate psychological operations and civil affairs operations.

The G3 supervises PSYOP, but the civil affairs officer (G5) coordinates those PSYOP directed against civilian populations. Psychological operations support CMO through political, military, and economic actions planned and conducted to mold the opinions, attitudes, and behavior of foreign groups to uphold US national objectives. They also counter enemy PSYOP. The target audience need not be under US control.

The G5 or the S5 staff supervises civilian affairs activities. Civil affairs are those activities that involve US military forces and civil authorities and people in a friendly country or area or those in a country or area occupied by US military forces. This relationship may be established before, during, or after military action in time of hostilities or other emergencies. In a friendly country or area, US forces coordinate activities with local agencies or authorities when possible. Usually these relationships are covered by a treaty or other agreement. In occupied territory, a military government may have to exercise executive, legislative, and judicial authority. Civil-military activities:

1. Identify the local resources, facilities, and support available for US operations. In theaters where US forces are forward-deployed in peacetime, such support may be prearranged through negotiated host nation support (HNS) agreements.
2. Coordinate the use of local resources, facilities, and such support as civilian labor, transportation, communications, maintenance or medical facilities, and miscellaneous services and supplies.
3. Minimize interference by the local population with US military operations.
4. Assist the commander in meeting legal and moral obligations to the local population.

Reconstitution. Sustained combat, heavy casualties, and massive destruction of equipment will require commanders to rebuild units during operations. Reconstitution is focused action to restore ineffective units to a specified level of combat effectiveness. Reconstitution may include replacement of personnel, supplies, and equipment; reestablishment or reinforcement of command and control; and conduct of mission-essential training. When the responsible commander determines that a unit is not sufficiently effective to meet operational requirements, reconstitution of that unit should begin as soon as feasible. Reconstitution requires coordinated planning by G3/S3, personnel officer (G1/S1), and logistical officer (G4/S4) staffs.

Commanders have two options available for reconstituting units: *reorganization* and *regeneration*. Reorganization is action taken to shift resources within an attrited unit to increase its level of combat effectiveness. Reorganization consists of such measures as internal redistribution of equipment and personnel and the formation of composite units. Regeneration is the rebuilding of a unit through large-scale replacement of personnel, equipment and supplies; the reestablishment of command and control; and the conduct of mission-essential training for replacement personnel. Usually a unit undergoing regeneration must be withdrawn from contact with the enemy.

These options can be used separately or in combination. Their application depends upon current and anticipated situations, command priorities, and resources and time available. Reconstitution does not automatically require unit withdrawal. However, a reconstituted unit should ideally be allowed time to stabilize and begin reestablishing internal cohesion before it is committed to battle again.

The commander's decision to reconstitute a unit is usually based on:

1. the unit's personnel losses, including military occupational specialty (MOS) shortages or shortages in leadership structure;
2. the unit's equipment status including shortages of mission-essential items, low operational ready rates of major items, or lack of maintenance and repair parts;

3. the unit's psychological condition, including its internal cohesion and the physical and mental condition of its soldiers; and

4. the impact of releasing the unit on the operations of the parent force, including the time and resources available to reconstitute it.

Based on an analysis of these considerations and any others that may be relevant, the staff determines a unit's level of combat effectiveness and recommends to the commander measures to correct identified problems. No single report will provide the commander and staff with the necessary level of detail to determine relative combat effectiveness. Commanders must determine their units' capabilities, taking into consideration both objective and subjective combat effectiveness indicators. Objective indicators include a comparison of personnel and equipment authorizations with on-hand strengths. Subjective indicators include evaluations of the levels of leadership, cohesion, training, and morale.

Summary

Operations planning is the key to success on the battlefield. The theater commander's goals are executed through joint air, land, and sea campaigns prosecuted by elements conducting close and deep operations. Engagements by brigade and smaller units evolve into battles of divisions and larger elements. The concepts of a unit's center of gravity, operational lines, and battlefield culminating points are key to operational planning at every level. The coordination of the functional areas of maneuver and fire systems bring the operational concept into tactical reality.

The Environment of Combat

Weather, terrain, and the day-night cycle constitute the basic setting for all military operations. These physical conditions significantly affect the movement, employment, and protection of units in campaigns and battles. Commanders must understand the operational and tactical implications of the physical environment as well as its effects on their soldiers, equipment, and weapons.

Commanders must also recognize the moral and physical effects of combat itself. These are as much a part of the setting of battle as the natural environment and are equally responsible for the "frictions" of war. The danger, destruction, and confusion of combat; the alteration of the terrain by weapons and obstacles; and the inevitable occurrence of the unexpected contribute substantially to that atmosphere in which, as Clausewitz said, "the simplest things become difficult."

Effects of Weather and Visibility

Weather and visibility conditions create advantages and disadvantages for opposing forces. To fight effectively, commanders must acquire weather information about their entire area of operations. They and their staffs must also know how to exploit the opportunities offered by the weather while minimizing its adverse effects on their operations. They must also understand the seasonal weather patterns that influence the campaign as a whole.

Weather affects soldiers, equipment, operations, and terrain. Cloud cover, wind, rain, snow, fog, dust, light conditions, and temperature extremes combine in various ways that affect human efficiency and limit the use of weapons and equipment.

Control of soldiers is more difficult in bad weather and in low-visibility conditions. Security of positions and formations is more difficult to maintain. Generally, inclement weather favors an attacker by concealing movement and making enemy air support less effective, even though it also degrades mobility. Defending troops tend to be less alert during inclement weather.

Weather conditions also affect equipment and weapon systems. Cloud cover reduces air support, degrades airborne sensors, limits airborne and air assault operations, and affects terminally guided weapons. Wind and precipitation also affect the performance of nuclear and chemical weapons and the extent of their downwind hazards.

Seasonal climatic conditions influence the conduct and support of large unit operations. Heavy rain, snow, and freezing and thawing cycles restrict cross-country movement. Poor trafficability increases fuel consumption, reduces range, increases maintenance requirements, and impedes tactical and logistical movement.

Freezing temperatures may improve trafficability, but also increase maintenance problems. Extreme heat, especially at high altitudes, reduces aircraft load limits; and heat waves from the earth's surface can make optical systems less effective. Sandstorms in the desert can disable or immobilize equipment.

Limited visibility also affects operations. Night, fog, and smoke reduce the useful ranges of most weapons. Despite technical advances in night vision equipment, these conditions usually require a change in tactics. The blinding effect of nuclear fires is greater at night. Generally, limited visibility favors the attacker. The defender's observation and the effectiveness of ground based weapons and air support are reduced. The movements of the attacker are more easily concealed, making it easier to achieve surprise.

Successful operations under adverse conditions or during periods of limited visibility require thorough planning. Simple schemes of maneuver should be rehearsed and then executed aggressively.

Three general observations summarize the effects of weather and visibility on operations:

1. Good physical condition, acclimatization, and discipline at the small-unit level can help offset the adverse effects of weather and visibility. In adverse conditions, a well-prepared force has an even greater advantage than usual over an ill-prepared enemy.
2. The leadership time and effort required to care for soldiers increases proportionately with the severity of weather.
3. Adverse weather impedes the air operations of both sides. Such weather is therefore most advantageous to the side inferior in air support, especially in offensive operations.

Effects of Terrain

Terrain forms the natural structure of the battlefield. Commanders must recognize its limitations and possibilities and use it to protect friendly operations and to put the enemy at a disadvantage. Terrain analysis, intelligence preparation of the battlefield (IPB), and engineer operations are key to the operational use of terrain.

Terrain Analysis. Understanding the limitations and opportunities of terrain is a fundamental military skill. Terrain analysis varies among levels of command. Leaders of small tactical units concentrate on woodlines, streams, and individual hills. Division and corps commanders analyze road nets, aerial avenues of movement, drainage patterns, and hill systems.

At the operational level, campaign planners consider terrain from an even broader perspective. Ports, transportation systems, natural resources, major land forms, and regional characteristics are significant in the planning and direction of campaigns. Features, such as coastal plains, mountain ranges, marshlands, and river deltas, must be considered as obstacles and avenues of movement for armies.

Commanders perform terrain analysis in the light of their units' missions. They evaluate the terrain's potential for cover and concealment, its impact on their own and enemy mobility, and its use for observation and direct fire effect. The able commander recognizes the battlefield's natural structure and acts to improve or overcome it as necessary to accomplish the mission. Such analysis must include a unit's assigned area of responsibility, the surrounding terrain that may affect operations, and the airspace immediately over it. Fire, maneuver, and obstacle plans are designed as an integrated whole fitted to the terrain on which the operation is to be conducted.

Commanders must consider the terrain in depth as well as in the area of their immediate operations. Terrain analysis extends into the territory through which the enemy must move to attack or to concentrate defensive forces. Areas of interest and operations must be evaluated to determine the areas and routes the enemy is most likely to use. Surveillance, interdiction, and deep operations depend upon that estimate. Destroying bridges, blocking defiles, or obstructing routes in depth can separate enemy echelons, isolate enemy positions, and create lucrative targets for ground or air attack.

Analysis of the terrain to the front, flanks, and rear of the assigned area is also necessary. Such analysis facilitates changes in the direction of friendly movement and assists in anticipating threats created by enemy maneuver during an operation.

After studying the area in detail, staff officers provide the commander with an assessment, including the ground's general organization, dominant features, chief avenues for movement to include low-level air approaches, and key terrain. Intelligence and operations officers identify significant features, air and ground avenues of approach, and defensible terrain. The staff or commander specifies named areas of interest (NAI) as a means of focusing the surveillance and interdiction efforts of the unit.

The key elements of terrain analysis are summarized in the traditional mnemonic OCOKA: observation and fields of fire, cover and concealment, obstacles and movement, key terrain, and avenues of approach.

Observation and fields of fire. Contour and vegetation affect observation and fire. Where visibility is limited, direct fire weapons are less effective and movement entails less risk. Remote sensors can be used to cue artillery and to cover some of the space that cannot be observed directly. Large forests, jungles, built-up areas, and tracts of broken ground limit observation and the effects of fire.

Fields of observation and fire differ according to weapon characteristics. Hilltops and the tops of buildings make excellent observation posts or radar sites, but are rarely satisfactory positions for direct fire weapon positions. Tanks, missiles, and machine guns must be sited where their effects will be the greatest and dead space will be minimized.

The terrain should also be analyzed in terms of air observation and fire. In many cases, Army aircraft can overwatch from flanking positions in woods and valleys that are inaccessible to ground troops. Conversely, the enemy can also be expected to exploit aerial avenues of approach for air reconnaissance and attacks.

Cover and concealment. Terrain can protect a unit from observation and fire or it can hide forces. Cover is protection from observation and fire. The cover afforded by slopes, folds, and depressions is critical because it preserves the strength of the force. Covered positions are as important to command posts, indirect fire units, reserves, combat support units, and combat service support units as they are to close combat units. Although nuclear and chemical fires can overcome some of the protection the ground affords, prudent dispersion of units among multiple covered positions can provide considerable cover even in active nuclear-chemical environments. Whether maneuvering on the ground or in the air, all forces should seek the protection of covering terrain to the greatest degree possible.

Concealment is protection from observation. Urbanized terrain, broken hills, high ground, and forested areas can be used to hide forces, but in operations against sophisticated forces, terrain alone cannot conceal a force or facility. Limiting electronic and thermal emissions must also be used to conceal units and headquarters, camouflage used to conceal personnel and equipment, and movement limited to help prevent the detection of hidden units. Even in fluid conditions, there will be opportunities to conceal forces for short periods.

Concealment of maneuver forces can be a great tactical advantage. Defenders can use it to draw the enemy deep into prepared defensive areas. Attackers can use it to avoid being detected or engaged as they approach defended positions. Stay-behind forces, from patrol to battalion size, can use it to permit bypass by attacking enemy forces.

Obstacles and movement. There are few truly impassable areas. The cliffs at Quebec, the tides of Inchon, and the Ardennes forest all appeared impassable to their defenders. Enterprising commanders have often won decisive victories by striking suddenly over unlikely routes. We should actively seek such "impassable" approaches in our offensive operations and protect difficult approaches into our own positions against surprise enemy attacks.

Roads, ridgelines, river valleys, and plains are high-speed approaches on which fluid battles may develop rapidly. Combat moves slowly through swamps, thick forests, soft sandy areas, and broken or mountainous terrain that is traversable only through defiles or by dismounted movement. Urban area also can constitute formidable obstacles.

Some areas vary in trafficability with the season or weather. Snow and ice on hills can slow a mounted movement considerably. Thaws or rains can change plains to quagmires within hours. The fires, tree blowdown, and contamination from nuclear or chemical weapons can alter movement conditions radically and rapidly.

Usually, an area of operations will contain a mixture of obstructing terrain and avenues that are suitable for air assault, mounted movement, or dismounted movement. Terrain that canalizes movement allows the defender to economize in difficult ground and to concentrate on the dangerous approaches. In such areas, the attacker must either secure the area before the defender can occupy it or resort to ground or aerial bypass, infiltration, or nuclear fires. In predominantly open area, the attacker will be able to choose between many different approaches and the defender may be forced to fight a mobile battle in depth.

Natural or constructed obstacles that parallel the direction of movement can protect the flanks of attacking or counterattacking forces. When such obstacles cross an avenue of approach, they form lines of resistance for the defender.

Obstacles vary in their effect on different types of forces. Rail lines, small streams, and villages along roads do not significantly impede dismounted operations, but can significantly slow the pace of a mounted operation. Adequately guarded forests and marshes that are difficult for unassisted armored forces to penetrate can be traversed by dismounted infantry or enveloped by air assault forces.

The most promising approaches are often those that appear unlikely. Often it is possible to gain access to a high-speed, ridge approach by crossing difficult terrain immediately to its front. Old roadbeds also offer good movement potential because they follow solid ground and are usually not as well defended as improved routes.

Key terrain. Key terrain is any feature, locality, or area that affords a marked advantage to the combatant who controls it. Since this advantage is situational, commanders designate key terrain only after they have analyzed their mission. Commanders may designate certain key terrain as "decisive terrain" if accomplishment of their mission depends on seizing or retaining it. Many battlefields will not have decisive terrain. Commanders designate decisive terrain in their concept of operation to communicate its importance to their staffs and to subordinate commanders.

Avenues of approach. Avenues of approach are evaluated in terms of their:

- Potential to accommodate maneuver units of a specified size and type.
- Access to important areas and adjacent avenues.
- Degree of canalization.
- Cover and concealment.
- Effect on line-of-sight communications.
- Obstacles.

A good avenue of approach must allow rapid movement along its entire length. Obstacles should be avoidable or reducible in reasonable time. The obstacle-producing effects of mines, barriers, and conventional, nuclear, and chemical interdiction must also be taken into account. Ideally, an avenue should be broad enough to permit lateral maneuver along its course and afford parallel spurs or branches that can be used to bypass strong defenses. Enough covering terrain should be available to permit part of the force to overwatch the rest. Combat support units and combat service support units must be able to move along the avenue in support of the attacking force. This may also be done over parallel routes or along routes that are uncovered as the attack gains ground. If the enemy has air superiority, the avenue should provide maximum concealment from the air.

Air avenues for attack helicopters, air assault forces, and close air support differ from ground avenues. A good air approach of any type provides rapid access to the target area, together with terrain-masking from air defense radar and direct-fire air defense weapons.

Analyzing avenues of approach is as important to the defender as to the attacker. The defender must accurately determine the main approaches to the sector and identify the internal avenues that will permit maneuvers against the attacker.

Terrain Intelligence. Commanders must personally acquaint themselves with the terrain to the fullest extent possible before combat. Because maps are sometimes inaccurate or incomplete, commanders should conduct detailed personal reconnaissance, issuing orders from vantage points on the ground itself whenever possible. The intelligence staff officer (G2 or S2) is responsible for assembling all available information on the terrain and producing an estimate of its effect on operations. Sources of terrain intelligence include military, civilian, and engineer maps; topographical studies; civilian officials and area residents; prisoners of war; and air, space, and ground reconnaissance units.

Terrain Reinforcement. The proper use of natural obstacles and the reinforcement of terrain must be an integral part of the commanders' plan. Artillery fires, direct-fire engagement areas, and obstacles must all be completely meshed in the tactical plan. At the operational level, routes must be built or improved and obstacles and interdiction planned in depth to support the campaign or major operation.

Terrain reinforcement and mobility and countermobility improvements are the responsibility of maneuver commanders. Generally, commanders should concentrate their engineer efforts in two directions. In one direction, they should develop an obstacle system in depth that enhances their fires and degrades the mobility of the enemy. In the other direction, commanders should develop covered positions and routes that facilitate the execution of their own scheme of maneuver.

Terrain reinforcement is a combined arms operation in which engineers and other units participate. Engineers install tank ditches, minefields, abatis, craters, and demolitions to canalize enemy movement, to hold the enemy forces in areas where they can be destroyed by fire, and to protect the flanks of maneuvering forces. Artillery, aviation, and close-air-support units emplace scatterable mines on targets of opportunity, to suppress threat air defense and artillery units and to interdict follow-on threat formations. Defending units emplace minefields around their own positions and usually construct their own fighting positions. Engineers operating with leading maneuver elements clear obstacles, construct bridges and rafts, and support countermine operations.

The introduction of remotely delivered scatterable mines makes every unit on the battlefield vulnerable to obstruction by mining. All units must therefore be capable of conducting mine-clearing operations.

Special Environments

Commanders must give special consideration to the unique characteristics of the area in which they are operating. Large urban areas, mountains, jungles, deserts, and winter zones pose special problems for sustained combat operations. A combination of these considerations is a condition of the battlefield that will likely be seen in the theater.

Urbanized Terrain. Commanders have always recognized the importance of urban centers as strategic objectives, but conducting operations in defended cities and towns has always been difficult. As the battles in Stalingrad, Aachen, Hue, and Beirut have shown, such efforts require enormous resources, diminish the tempo of offensive operations, restrict maneuver, and consume time. From an operational perspective, therefore, commanders should avoid committing forces to the attack of urban areas unless the mission absolutely requires doing so. Conversely, urbanized terrain may offer great advantages to the defender, provided the attacker is unable readily to avoid or bypass the urban area.

In urbanized terrain, engagement ranges are shorter and terrain detail is more varied. Structures offer observation, fields of fire, and cover and concealment. When a sewer system is available for communications and small unit maneuvers or when heavily constructed multistory structures are present, they add a vertical dimension to urban combat.

The cover and concealment available in urban areas usually work to the tactical advantage of the defender. Mutually supporting strongpoints in an urban area or village can slow or impede the attacker and provide islands of resistance around which to maneuver and counterattack. They can also create opportunities for offensive maneuver against an attacker who has been halted and lies exposed at the edge of an urban area.

The attacker will attempt to isolate and bypass most built-up areas. Like the defender, the attacker can take advantage of urban cover and concealment to position command posts, supplies, and combat service support (CSS) units. Both forces will be affected by the presence of the population and its sympathies in the conflict.

Urban areas impede the operations of armored and mechanized forces. restricting their mobility, maneuverability, and the effectiveness of their long-range weapons. Infantry forces including light forces are best suited to combat in built-up areas. In such areas, they can hold well-protected positions while minimizing their vulnerabilities to heavy weapons. For details of how to fight on urbanized terrain, see FM 90-10, *Military Operations on Urbanized Terrain (MOUT).*

Mountains. Light forces (infantry, airborne and air assault) can operate effectively in mountainous regions because they are not terrain-limited. In such regions, light forces move primarily by air and on foot. Heavy forces must necessarily operate in passes and valleys that are negotiable by vehicles. Aviation units will be important for reconnaissance, antitank fire, and troop movement. Even then, dismounted infantry and aviation units will be needed to secure the high ground along the flanks.

Mountainous terrain significantly influences the use of weapons and equipment. Direct fire is generally less effective there because rocks and cliffs offer good natural cover. Aerial and long-range fires, however, will be effective because of the good observation the elevation affords, even though slopes limit grazing fire and create large dead spaces. Weapons with a high angle of fire, such as field artillery and especially mortars, and grenade launchers, take on added importance because they can reach into dead space.

Ground mobility in mountains is extremely difficult. Highways usually run in the valleys; existing roads and trails are normally few and primitive; and cross-country movement is particularly arduous. Helicopters, however, can usually overcome these difficulties. Although limited by unfavorable weather, density-altitude considerations, and enemy air defense, helicopters are extremely useful for moving troops and equipment, for reconnaissance, and for command and control during mountain operations.

From an operational perspective, mountain combat lacks the unity that is characteristic of combat in level or rolling terrain. The compartmented nature of the terrain induces isolated contests that are difficult for higher commanders to control. Typically, major engagements occur at the entrances and exits of passes.

Mountainous terrain tends to favor the defender and provides excellent observation and firing positions. Constructed obstacles reinforce the natural ruggedness of mountainous terrain. The defender can easily deceive the enemy as to strength and dispositions. Because the defender normally has more time to develop lateral trails, the defender can usually shift forces on the ground more rapidly than the attacker. Delaying actions are particularly effective in the mountains and can be achieved by smaller-than-ordinary forces. Nonetheless, an aggressive attacker can sometimes traverse mountains rapidly, as the US campaign through the Eifel and the German attack through the Balkans demonstrated. A detailed discussion on how to fight in mountains is in FM 90-6, *Mountain Operations*.

Jungles. Jungle warfare has been common throughout the world in this century. Central Africa, Southeast Asia, the Pacific Islands, and Central and South America have all seen jungle combat at varying levels of intensity.

Jungles vary from tropical rain forests and secondary growth forests to swamps and tropical savannas. The dominating features of jungle areas are thick vegetation, constant high temperature, heavy rainfall, and humidity. These features combine to restrict movement, observation, fields of fire, communications, battlefield surveillance, and target acquisition. However, they also provide excellent cover and concealment.

Operations in jungles tend to be isolated actions because of the difficulities of movement and of maintaining contact between forces. Divisions can move cross-country slowly, but aggressive reconnaissance, meticulous intelligence collection, and detailed coordination are required to concentrate forces in this way. More commonly, large forces operate along roads or natural avenues of movement and, as in the mountains, this is where decisive battles will occur for the most part. Both combatants usually try to support or reinforce their committed forces by air and ground once fighting begins. Jungle combat has historically seen active deep operations of interdiction by air and ambush.

Large unit actions are usually surrounded by very active security areas in jungle operations. Patrolling and other surveillance operations are especially important to assure security of larger forces in the close terrain of jungles. This produces frequent engagements between small forces fighting for control of the security area. When security forces succeed in making contact with a larger force, they may be reinforced as their commander tries to bring on decisive battle.

Air operations are also highly important in the jungle because of the difficulties of ground movement. Reconnaissance, maneuver, fire support, and CSS can all be greatly assisted by air operations. A force without effective air support may make its major operational effort in the area's rainy season and concentrate on night tactical operations throughout the year to nullify its disadvantage. When the area of operations lies in a coastal or island area, naval support can be used for many of the same purposes as air support.

Short fields of observation and fire and thick vegetation make maintaining contact with the enemy difficult. The same factors reduce the effectiveness of indirect fire and make jungle combat primarily a fight between infantry forces. Support by air and mechanized forces can be decisive in jungle battles or engagements, but it will not always be available or effective. A detailed discussion of how to fight in jungles is found in FM 90-5, *Jungle Operations*.

Deserts. Forces of all types can be employed in the desert. Armor and mechanized infantry forces are especially suitable to desert combat except in rough mountainous terrain where light infantry may be required. Air assault and motorized forces can also be advantageously employed to exploit the vast distances characteristic of desert warfare. Amphibious and airborne forces may be valuable to secure a lodgment in desert areas, but the former will usually be unable to operate far inland while the latter will require additional tactical mobility to conduct operations outside the lodgment area.

Deserts are semiarid and arid regions that contain a wide variety of soils in varying relief. Weather conditions can change rapidly. Temperatures may range from 30 to 130 degrees Fahrenheit in a 24-hour period. A clear day with unequaled visibility and flight conditions may quickly change to a raging sandstorm that can halt all military operations. Long periods of drought can be interrupted by sudden rains that bring flash floods and mud but little relief from water shortages. Large areas of excellent trafficability are often interspersed with rugged mountains, dunes, deep ravines, bogs, and sand seas. The availability of water will be a prime factor in planning and executing desert operations. The selection of locations for supporting logistics facilities and selection of objectives will frequently be based on water supply.

Flat desert areas alter the conduct of military operations. Because the terrain does not canalize large forces, large scale use of mines and obstacles becomes necessary. The lack of prominent features complicates land navigation and requires the use of dead-reckoning and celestial navigation. Although the lack of relief diminishes the influence of key terrain, small indentations and folds in the ground can provide cover for small units and individual vehicles. Because of the sparse vegetation, concealment in the desert is more difficult than in many other environments. Concealment, however, is not only possible, it is absolutely necessary. To survive, forces must use camouflage nets, pattern and mud painting, covers for reflective surfaces, and similar techniques. In general, easy observation makes undetected advances and withdrawals difficult.

Deception measures of all types (feints, ruses, decoy equipment, for example) thus become mandatory for success. Movement at night or during sandstorms while maintaining strict communication security assumes enormous importance in positioning units. Engagements are often fought at long ranges, and this places a premium on accurate gunnery at maximum range.

The desert environment has a debilitating effect on troops who have not been properly acclimatized or trained. Continuous exposure to the sun causes profuse sweating, sunburn, dehydration, cramps, heat exhaustion, and even heatstroke. The environment induces mental fatigue, impaired perception, and depression which, coupled with the pressures of combat, can overwhelm unprepared soldiers.

The desert has an even more adverse effect on machines. Intense supervision is required to ensure continuous availability of clean air, fuel, and lubricants. Vehicle cooling and electrical systems are vulnerable to extremes of temperature. Tracks, tires, and suspension systems wear out rapidly in the desert. The intense desert heat can also cause communication equipment to overheat and malfunction. A detailed discussion of how to fight in desert areas is in FM 90-3, *Desert Operations*.

Winter Zones. In regions such as the polar ice cap, survival of forces requires so many resources that few may remain to do anything militarily useful. Therefore, the likelihood is small that large forces will be committed to such an extreme environment.

Larger forces, however, might well have to operate in a number of less severely cold environments worldwide. In areas that experience extremely cold winters, troops will have to be specially trained and equipped if they are to fight on equal terms with a well-prepared enemy. Commanders in such areas will have to pay special attention to the protection, mobility, and tactics of their units.

When the temperature remains below zero for an extended period of time, troops will require special clothing, larger than usual rations, and more rest. They will have to be trained and acclimated to move, fight, and maintain themselves and their equipment in a hostile environment.

Although frozen ground and water can improve trafficability in winter, vehicles require special care to remain in operation. Batteries lose their charges rapidly. Engines need lighter weight lubricants. Water-based cooling systems need antifreeze. Track, tires, and suspension systems are subject to special strains when the temperature remains low and when the ground is frozen. Weapons also need special attention and maintenance because of the stiffening of recoil mechanisms and the increased brittleness of metal parts. Special gunnery techniques and computations may also be required to compensate for the effects of deep cold on propellants and the reduced effectiveness of ground bursts in snow.

Forces fighting in extreme winter conditions will have to learn special techniques of camouflage and of contructing fighting positions on frozen ground. They will almost always need to be well prepared for night operations since winter days are short. Air support for friendly maneuver and vulnerability of friendly forces to air attack will be affected by icing conditions, winds, and snowstorms. Commanders will have to take these limitations of aviation into account when planning tactical actions, troop movements, reconnaissance, and supply operations.

Finally, the winter environment significantly increases the time required for the performance of all tasks in the open. Construction of fighting positions, installation of obstacles, performance of maintenance tasks, and movement of units on foot can take five times the normal time in severe cold. The highest caliber of leadership is required to assure that all necessary tasks are performed; that security is maintained, and that troops and their equipment are protected from the physical effects of extremely low temperatures. A detailed discussion of how to fight in winter is in FM 90-11, *Winter Operations*.

Effects of Nuclear and Chemical Weapons

Soviet doctrine emphasizes the principle of mass and seeks victory through relentless offensive operations. If nuclear and chemical weapons are required to ensure success, they will be used.

The immediate effects of nuclear weapons are blast, thermal radiation, initial nuclear radiation, and electromagnetic pulse (EMP). These effects can cause significant personnel and materiel losses. Nuclear weapons can also cause tree blowdown, urban destruction, fires, radiological contamination and, in some cases, flooding. The EMP from a nuclear explosion can burn out unshielded electronic equipment. Long-term residual radiation from fallout or rainout can injure or kill soldiers. It may also contaminate supplies, facilities, equipment, terrain, and uncovered food or water.

On a nuclear or chemical battlefield, heavy casualties could occur very quickly. Such heavy and sudden losses are likely to shock and confuse inadequately trained or psychologically unprepared troops.

In addition to taking immediate casualties, units suffering such attacks will be weakened by long-lasting effects. Soldiers exposed to different levels of radiation will lose varying effectiveness. Wearing chemical protective clothing or operating for long times in contaminated environments will also degrade performance. Commanders must apply the proper mission-oriented protective posture (MOPP) to balance protection with mission accomplishment.

The use of chemical and nuclear weapons will dramatically affect the control of forces. Command posts will be prime targets for attack. Even within small units, control will be difficult. Soldiers and leaders who are wearing protective equipment will be difficult to recognize. Leaders will have to cope with the additional burden of their protective equipment while they perform their duties. Only cohesive, disciplined, and well-trained units can function in such an environment.

Units survive by anticipating nuclear or chemical attacks. They must take the following measures to avoid becoming lucrative targets:

1. Maintain alertness. Commanders at all levels must be continually alert to nuclear or chemical attack. They have to balance the risk to their units against mission requirements, adjusting their dispersion and MOPP without losing momentum.

2. Instill discipline. Units must continue their missions in spite of nuclear or chemical attacks. Troops should be physically conditioned by frequent training in protective clothing and psychologically prepared for the effects of nuclear and chemical weapons.

3. Avoid detection. Units must use active and passive measures to defeat enemy target acquisition capabilities.

4. Retain mobility. Tactical mobility gives commanders the best chance for survival. Commanders must consider displacing whenever they suspect that their units have been detected.

5. Disperse forces and installations to limit damage. Units and facilities must be kept dispersed to the maximum degree consistent with mission performance. Proper dispersal is based on the characteristics of enemy weapons and must include provisions for massing on short notice. The degree of acceptable dispersal will depend on the tactical situation, enemy capabilities, and available terrain.

6. Seek terrain shielding and cover. Natural terrain shields troops from the effects of nuclear and chemical weapons. Foxholes with overhead cover and simple shelters are usually preferable to elaborate shelters that take a long time to construct and are easily detected.

7. Ensure logistical preparedness. The logistical system must continue to function in a nuclear or chemical environment. Logistical facilities should be dispersed, concealed, and redundant. Units must have sufficient combat supplies, protective clothing, decontamination, and medical supplies to fight without immediate support.

8. Plan for rapid reconstitution. Commanders must be prepared to continue the mission after a nuclear or chemical attack. The commander who can reconstitute or replace lost units rapidly will have the advantage in the continuing battle. Prompt damage assessment following an enemy strike and early implementation of contingency plans are the keys to rapid reconstitution.

Effects of Electronic Warfare

Opposing armies possessing electronic warfare capabilities will attempt to deny their enemies the use of the electromagnetic spectrum. They will analyze their opponent's communications, radar, and data processing systems and act to destroy or disrupt them at critical times.

Using countermeasures to cope with enemy electronic warfare may mean the difference between tactical success and failure. The commander should take the following steps to conceal emitters or to deceive the enemy as to their identities and locations:

- Change radio frequencies often.
- Use directional antennas.
- Issue emission control (EMCON) orders to restrict use of the electromagnetic spectrum.
- Employ manipulative electronic deception (MED) to alter their electromagnetic profiles or to portray notional units.
- Use wire or cable communications whenever possible.

Operators must be trained to work in spite of EW. Commanders should make their tactical training in EW as realistic as possible.

Continued operations in an EW environment require:

1. training operators to use communications-electronics operations instructions (CEOI) and to make short transmissions,
2. operation on the lowest power possible,
3. masking emitters with terrain,
4. finding and attacking enemy EW assets,
5. establishing alternate communications means, and
6. training subordinates to act independently in support of the overall mission when communications fail.

Effects of Smoke and Obscurants

Opposing forces will use smoke to increase their effectiveness while reducing their vulnerability. Specifically, smoke can (1) deny the enemy information; (2) reduce the effectiveness of enemy sensors, range finders, and target designators; (3) restrict nap of the earth and contour approaches for enemy aircraft; (4) disrupt enemy movement, operations, and command and control; (5) create conditions to surprise the enemy; (6) mask the use of chemical weapons; and (7) deceive the enemy.

In US tactical operations, each level of command plans the use of smoke to support its overall plan. When planning smoke operations, commanders must weigh how smoke will degrade enemy combat effectiveness against how it might adversely affect friendly command and control and target acquisition. Units employing smoke must coordinate with adjacent, higher, and lower headquarters to avoid disrupting their operations. During darkness and other periods of reduced visibility, smoke can degrade enemy observation capability further, particularly the capability of enemy electro-optical devices. It can increase the effectiveness of conventional and scatterable mines and chemical munitions. Similarly, smoke can intensify the effects of electronic warfare on enemy command and control.

Battlefield Stress

Commanders must bear in mind the stressful effects of combat as they plan and conduct operations. The pressures that battlefield chaos and destruction place on soldiers have always been very great. Unit discipline, realistic field training, deliberately fostered unit cohesion, and solid bonding between leader and led can diminish the effects of this stress in part, but nothing can wholly eliminate it. Commanders who understand this and protect their soldiers through strong, positive, and caring leadership, proper mental, physical, and training preparation, and simple decisive plans will win.

The lethality of modern weapons, the disruption of control through enemy use of EW, the physical expansion of the danger area around battlefields, and the threat or use of nuclear and chemical weapons are all mentally corrosive. Commanders must act to protect their units accordingly. Leaders at all levels must be able to recognize the signs of battlefield stress and deal with it quickly and effectively. Prompt treatment of stress casualties in forward areas can rapidly return most soldiers to duty. Further, constant effort to protect the force and an observable concern for the soldier's personal welfare will help troops cope with stress, and thus maintain fighting effectiveness. Finally, deliberate actions to maintain and enhance unit cohesion through effective integration of replacements, shared responsibilities among the leadership, and sustainment of small unit teams will pay handsome dividends.

While shielding their own troops from stress, commanders should attempt to promote terror and disintegration in the opposing force. Aggressive patrolling, raids, and sudden, violent actions that catch the enemy by surprise and do not permit the enemy to recover should be commonly used as tools to maginify the enemy's battlefield stress. Coupled with attacks on the enemy's command structure, the use of artillery, air-delivered weapons, EW, smoke, deception, psychological warfare, and special operations forces, stress-creating actions can hasten the destruction of the enemy's capability.

Historically, even the psychological stress of victory has been considerable. Much of the difficulty of initiating or sustaining exploitations or pursuit has been connected with overcoming the exhaustion of troops and junior leaders. In such cases, commanders must make a realistic appraisal of their soldiers' actual capabilities and drive them on even in the face of great resistance to gain the full advantage of their success. Such determination is even more critical with defeated or retreating troops, who are harder to rally.

Summary

The environment of combat is inherently dangerous without the tactical displacement of forces having to be considered. The physical environment—jungles, mountains, deserts, and arctic wastelands—coupled with the effects of weather and visibility, electronic warfare, smoke, and battlefield stress add up to a mind-numbing condition. In addition to these factors to be considered are the effects of nuclear, biological, and chemical operations. A determined foe in a hostile environment presents a significant challenge for both the leader and the led.

Offensive Operations

The offensive is the decisive form of war—commanders' ultimate means of imposing their will upon the enemy. Although strategic, operational, or tactical considerations may require defending, defeat of an enemy force at any level will sooner or later require shifting to the offensive. Even in the defense itself, seizure and retention of the initiative will require offensive operations. The more fluid the battle, the more true this will be.

From Yorktown in the Revolutionary War to the Yalu River in the Korean War, the US Army has a history of successful offensive campaigns. Sherman, Jackson, MacArthur, Bradley, and Patton are names that stand out from a long list of American leaders who were expert in the attack. General Grant also understood the essence of offensive operations. Although he could fight direct and bloody actions when necessary, he also was a master of maneuver, speed, and the indirect approach. His operation south of Vicksburg fought in the spring of 1863 has been called the most brilliant campaign ever fought on American soil. It exemplifies the qualities of a well-conceived, violently executed offensive plan.

The same speed, surprise, maneuver, and decisive action will be required in the campaigns of the future. Sensors and long-range weapons, the mobility of ground and air units, and the concentration of forces and fires at the time and place of the attacker's choosing must all be harnessed to the task of collapsing the enemy's defenses rapidly and in depth.

Purposes of the Offense

Offensive operations are undertaken to:

- Defeat enemy forces.
- Secure key or decisive terrain.
- Deprive the enemy of resources.
- Gain information.
- Deceive and divert the enemy.
- Hold the enemy in position.
- Disrupt an enemy attack.

Because the offensive requires attackers to expose themselves by movement, offensive operations usually require attackers to achieve a local superiority in combat power at the point of the attack. That, and the need to have sufficient force available to exploit success, imply accepting risk elsewhere. A successful attack must therefore be pressed relentlessly to prevent the opponent from recovering from the initial shock, regaining equilibrium, and reconstituting a cohesive defense or attacking in the turn.

Although offensive operations may have as their objective the destruction or neutralization of an enemy force, inflicting physical damage is frequently incidental to offensive success. Rather, large gains are achieved by destroying the coherence of the defense, fragmenting and isolating enemy units in the zone of the attack, and driving deep to secure operationally decisive objectives. Historically, the most successful offensive operations have produced more enemy prisoners than casualties, reflecting the corrosive impact of offensive shock on the enemy's will to resist.

Such results are most likely from attacks that avoid the enemy's main strength. These attacks would turn the enemy forces out of defensive positions, isolate them from their sources of support, and force them to fight in an unintended direction over ground they have not prepared. Successful commanders have consistently attempted to produce such conditions, thereby shifting to the defender all the disadvantages of fighting exposed and surprised. Field Marshal Viscount Slim put it concisely:

> Hit the other fellow
> As quick as you can,
> As hard as you can,
> Where it hurts him most,
> When he isn't looking.

There will be times, of course, when only more direct attacks are possible. Even Gen Douglas MacArthur, a master of maneuver, was forced into frontal attacks to seize Buna and Gona in New Guinea. Such attacks are nearly always costly in lives and materiel. They should therefore be undertaken only when no other approach is possible or will accomplish the mission.

Although most attacks seek the outright defeat of the opposing force, offensive operations may also be conducted for related purposes. Attacks may be mounted to seize key terrain for use in defense or subsequent attack, or to secure or protect vital lines of communication. The Israelis' capture of the Mitla Pass in 1967, for example, provided the springboard for their subsequent drive to the Suez Canal. Attacks may also be conducted to secure critical war-supporting resources, as in Germany's effort in 1941 to seize Great Britain's oil fields in the near east.

Sometimes an attack may be launched simply to force the enemy to disclose strength, dispositions, or intentions. Such a reconnaissance in force may develop into a major attack if the inital probe discloses an exploitable weakness in the enemy's defenses. Attacks may also be used to deceive or distract the enemy. Used in conjunction with other deception measures, such diversionary attacks can delay the enemy's identification of and reaction to the main effort, and may actually cause a shift of forces away from critical areas. Alternatively, an attack may be designed to fix an enemy force in position, thereby preventing its interference with a friendly maneuver elsewhere. Feints and demonstrations are special forms of diversionary attack.

Finally, once hostilities have begun, attacks may be used by a defending force to disrupt an expected enemy attack, upsetting its preparation and thus buying time and information. As in the case of the reconnaissance in force, such a spoiling attack may develop into a major offensive operation if the attack reveals an exploitable weakness. Raids are a special form of spoiling attack, designed to destroy installations or facilities critical to the enemy's operations. Raids may also be mounted before or in conjunction with other offensive operations to confuse the enemy or divert attention.

Characteristics of Offensive Operations

The higher commander's concept of operations determines the conduct of an offensive operation. Whatever their purpose, all successful offensive operations are characterized by surprise, concentration, speed, flexibility, and audacity.

Surprise. Commanders achieve surprise by striking the enemy at a time or place, or in a manner, for which the enemy is unprepared. Surprise delays enemy reactions, overloads and confuses command and control, reduces the effectiveness of weapons, and induces psychological shock in soldiers and leaders. By thus radically diminishing enemy combat power, surprise enables an attacker to succeed with fewer forces than the attacker might otherwise require.

Achieving outright surprise once hostilities have begun has never been easy, and modern surveillance and warning capabilities have made it even more difficult. Surprise can still be achieved, however, by operating in a manner contrary to the enemy's expectations—for example, by attacking over a more difficult, therefore less obvious, avenue of approach or in adverse weather. Germany's precipitate defeat of France in May 1940, for example, resulted in large measure from the surprise created by attacking through the "impassable" Ardennes Forest. Four years later, German armies surprised American forces by attacking in the dead of winter over the very same ground.

Surprise can also be created by radically altering the structure or tempo of the battle. For example, the insertion of airborne, airmobile forces, or special operating forces deep in the enemy's rear can sharply and suddenly increase the enemy's sense of threat. This action could sow fear and confusion, and in the extreme case, induce outright paralysis. British and American airborne attacks the night before the Normandy invasion had just such an effect on defending German forces. Similarly, deep ground attacks can achieve surprise simply through the rapidity with which they move, by confronting rearward enemy forces with a wholly unanticipated threat. The Israeli attack in the Sinai in June 1967 illustrated such surprise-gaining agility.

Finally, surprise can be achieved by manipulating the enemy's expectations through deception, feints, and ruses. Egypt's attack across the Suez Canal in 1973 owed its success in part to a succession of demonstrations and maneuvers conducted in the months before the attack. These actions led Israeli commanders to believe that preparations for the actual attack were merely part of the same pattern. More recently, British forces in the Falkland Islands used deception effectively to surprise Argentine forces defending Port Stanley.

Although surprise can radically degrade enemy combat power, the effect is usually only temporary, as the events of the Battle of the Bulge demonstrated. Unless enemy forces or their leaders are inherently fragile, they will sooner or later recover from the initial shock. History affords countless examples of armies, including our own, that recovered from initial surprise to achieve final victory. To reap the benefits of surprise, therefore, the attacking commander must exploit its initial shock ruthlessly, allowing the enemy no time to regain equilibrium.

To sum up, surprise can be a vital ingredient of successful offensive operations. But it can never be guaranteed, and, even when achieved, rarely lasts. While always seeking surprise, therefore, the commander must also hedge against the loss of surprise and plan for the aggressive exploitation of surprise whenever it is achieved.

Concentration. Although surprise may often contribute to offensive success, concentration of effort is invariably essential to both achieving and exploiting it. Virtually all modern offensive operations have been characterized by sudden concentrations followed by rapid, deep exploitations. Germany's attack through France in 1940, the Soviet attack into Manchuria in 1945, MacArthur's counteroffensive in Korea in 1950, and Israel's seizure of the Sinai in 1967 all illustrate the rapid concentration of combat power to penetrate or envelop, then shatter the enemy's defenses. In all but the Manchurian case, the attacker enjoyed little overall numerical advantage. Rather, each succeeded by achieving overwhelming local superiority, then preserving that initial advantage by rapid and relentless exploitation.

Modern technology has made the process of concentration both more difficult and more dangerous. Although advances in ground and air mobility enable the attacker to concentrate more rapidly, they also enable the defender to react more quickly. Moreover, the lethality of modern weaponry—especially nuclear weapons—radically increases the threat to concentrated formations.

To overcome these difficulties attacking commanders must manipulate both their own and the enemy's concentration. First, commanders must disperse their forces to stretch the enemy's defenses and to avoid presenting lucrative targets for the enemy's deep fires. Then, commanders must concentrate rapidly along converging axes to overwhelm enemy forces at the point of attack, then disperse once again to exploit initial success and shatter the enemy's defense in depth.

Achieving this pattern of rapid concentration and dispersal requires flexible leaders, agile units, and careful synchronization of combat, combat support, and combat service support activities. Commanders at all levels must designate a main effort, focus resources to support it, and be prepared to shift it rapidly without losing synchronization as the attack unfolds. Units making the main attack must be allocated enough combat support and combat service support to adjust to changing circumstances without time consuming and potentially confusing reorganizations. At the same time, the commander must retain control of sufficient assets to shift the main effort to a supporting attack if the latter appears more promising.

At every level, but especially at division and higher, special effort must be devoted to concealing concentration until it is too late for the enemy to react to it effectively. Units must avoid or mask patterns of movement and preparatory activity that might reveal the direction or timing of attack. Logistical build-ups, patrolling activities, communications, and indirect fires must be monitored to preclude a visible change in the attacking force's operating pattern. Speed, security, and deception are essential to successful concentration for attack.

On an air-land battlefield, concentration will require the careful prior coordination of other service support—especially air support. Tactical air operations will be vital at every stage of the attack—offensive and defensive counterair to protect the concentration from detection and attack. Also needed is reconnaissance and interdiction to delay and disrupt enemy counterconcentration, and close air support to weight the main effort and especially, sustain the momentum of the attack. The flexibility of air power makes it a powerful instrument of rapid concentration, but its full advantages cannot be realized unless ground and air operations are effectively synchronized.

Speed. The attack must move rapidly. Speed is absolutely essential to success. It promotes surprise, keeps the enemy off-balance, contributes to the security of the attacking force, and prevents the defender from taking effective countermeasures. Properly exploited, speed can confuse and immobilize the defender until the attack becomes unstoppable. Finally, speed can compensate for a lack of mass and provide the momentum necessary for attacks to achieve their aims.

Attacking forces move fast and follow reconnaissance units or successful probes through gaps in enemy defenses. They must shift their strength quickly to widen penetrations, roll up exposed flanks, and reinforce successes. The attacker tries to carry the battle deep into the enemy rear to break down the enemy's defenses before the enemy can react. The enemy must never be permitted to recover from the shock of the initial assault, never be given the time to identify the main effort. Above all the enemy must never be afforded the opportunity to mass forces or supporting fire against the main offensive effort.

Speed is built into operations through careful planning. Commanders must identify the best avenues for attack, plan the battle in depth, provide for quick transitions to exploitation and pursuit, and concentrate and combine forces effectively. Speed depends on the violent execution of the plan by fire and maneuver units, but it will also depend on:

- Full understanding of the commander's intent.
- Availability and positioning of engineers.
- Use of air and ground cavalry.
- Maintenance of effective air defense.
- Responsive logistic support of the force.
- Effective use of military intelligence (MI) and electronic warfare (EW) assets.
- Effective command and control.
- Effective air support.

Flexibility. The attack must be flexible. Commanders must foresee developments as far ahead as possible. However, they must also expect uncertainties and be ready to exploit opportunities. To preserve synchronization on a fluid battlefield, initial planning must be detailed. Subordinates must understand the higher commander's aims so well that they can properly exploit battlefield opportunities even when communications fail. The corps or division must coordinate and support all arms and control operations that may cover 50 to 80 kilometers daily and change direction frequently. Brigades and battalions must sustain themselves in such an environment and maintain the ability to change direction quickly without losing their concentration or synchronization.

The plan must use routes that permit the maximum possible opportunities for maneuver around strongpoints. A major offensive operation must provide:

1. Branches from the main approach.
2. Plans for reversion to the defense and for exploitation.
3. Control measures that facilitate changing the direction or location of the main effort.
4. Provisions for combat at night or in limited visibility.

Even if nuclear and chemical weapons do not support the attack, commanders must plan to protect the force from their use by the enemy. Planning for maximum dispersal, using multiple routes, and having reserves assume major missions are all basic to an attack.

Audacity. Audacity has always been a feature of successful offensives. More attacks have been defeated because of lack of audacity than for any other reason. To the overly cautious around him, Gen George S. Patton, Jr., warned, "Never take counsel of your fears. The enemy is more worried than you are. Numerical superiority, while useful, is not vital to successful offensive action. The fact that you are attacking induces the enemy to believe that you are stronger than he is." In short, the key tenets of AirLand Battle doctrine—initiative, agility, depth, and synchronization—also apply to any successful attack.

Phases of Offensive Operations

All offensive operations tend to occur in roughly sequential phases. The length and nature of each phase, and whether it even occurs at all, will vary from situation to situation. The four general phases of offensive operations are preparation, attack, exploitation, and pursuit.

Preparation. The preparatory phase of an offensive operation involves the concentration of attacking forces and associated support and their movement into contact with the enemy. It may also include the conduct of preliminary diversionary actions and delivery of preparatory fires. The extent and nature of the preparatory phase will depend on whether or not opposing forces are already in contact and on the posture of the enemy.

A central feature of the preparatory phase is the *movement to contact*, conducted to gain or reestablish contact with the enemy. Although usually associated with mobile operations in which both sides are contesting the initiative, movement to contact occurs at some level in virtually all attacks where forces are not in immediate proximity. It is characterized by rapid movement along multiple axes, decentralized control, and rapid deployment of combined arms formations from the march to attack or to defend.

In a fluid situation where both opponents have freedom of maneuver, movement to contact will frequently produce a *meeting engagement*. That is, an engagement in which each side attempts to seize the initiative and either overwhelm the other or force it into the defensive. The Soviets consider this a likely event, especially in nuclear or chemical warfare, and assiduously practice rapid attack from the march. More frequently, movement to contact occurs when a defending enemy has disengaged or is attempting to do so. Here the objective of the movement to contact is to force the enemy to battle before the enemy can reestablish a cohesive defense.

Even in less fluid conditions, movement to contact will be necessary whenever opposing forces are beyond immediate observation. In a division attack, for example, battalions or even brigades may need to conduct a movement to contact before deploying for attack. It may be necessary to conduct a movement to contact if the situation to their front is ambiguous and enemy positions have not been clearly located. Such situations are especially characteristic of wide envelopments.

In either case, the critical elements of the movement to contact will be security to the front and flanks, and smooth and rapid deployment into the attack when contact is made. Also critical is prior coordination of supporting fires, both ground and air, to produce the fastest possible buildup of combat power superiority at the point of contact. Seizure of the initiative is the overriding imperative and will require aggressive action by leaders at every level without waiting for detailed orders.

Attack. Unless contact reveals an overwhelmingly superior enemy force, movement to contact will usually be followed immediately by a *hasty attack*. The attack is launched with the forces at hand and with minimum preparation to destroy the enemy before the enemy is able either to concentrate or to establish a defense. Such an attack may also be employed to seize a fleeting opportunity or regain the initiative quickly after a successful defense. In the defense, hasty counterattacks may recapture lost positions before the enemy has had time to consolidate the success. In World War II, German units down to platoon level were renowned for the rapidity and effectiveness with which they could mount such hasty counterattacks.

At higher echelons, hasty attacks are often anticipated through the use of contingency plans. Large formations attack from the march using hasty attacks by subordinate units or covering forces.

Regardless of its purpose or the echelon at which it is conducted, a hasty attack purchases agility at the risk of losing synchronization. To minimize this risk, units conducting hasty attacks must make maximum use of standard formations and well-understood and rehearsed battle drills. Supporting arms and services must be able to react quickly using prearranged procedures. The more closely combat and supporting units have worked together before the attack, the easier and more successful such implicit coordination will be. Hasty attacks accordingly place a premium on habitual relationships among supported and supporting units at every level.

In contrast to hasty attacks, *deliberate attacks* are fully synchronized operations that employ every available asset against the enemy defense. Because such synchronization requires careful planning and extensive coordination, deliberate attacks take time to prepare. During this time, the enemy can improve defenses, disengage, or launch a spoiling attack. Deliberate attacks should therefore be reserved for those situations where the defense can neither be outflanked nor overcome with a hasty attack.

Whether hasty or deliberate, successful attack depends on concentrating the maximum possible shock and violence against the enemy force. The objective is to shatter the enemy's nerve, ruin the combined arms synchronization, and destroy the units' cohesion and the willingness of the soldiers to fight. The most successful attacks leave defending units incapable of further resistance.

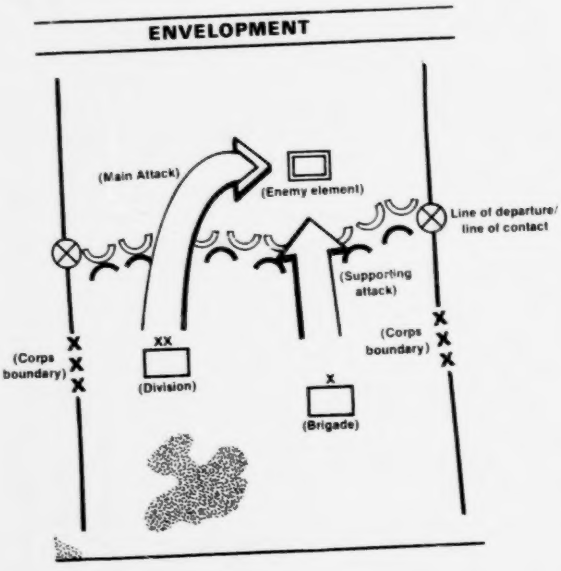
Exploitation. Attacks that succeed in annihilating a defending enemy are rare. More often, enemy forces will attempt to disengage, withdraw what they can, and reconstitute an effective defense as rapidly as possible. In large-scale operations, they may attempt to draw forces from less active areas or to bring forward reserves heretofore uncommitted. Every attack not restricted by higher authority or lack of resources should therefore be followed without delay by bold exploitation designed to keep enemy forces under pressure, compound their disorganization, and erode their will to resist. The ultimate object of the exploitation is disintegration of enemy forces to the point where they have no alternative but surrender or flight.

Pursuit. If it becomes apparent that enemy resistance has broken down entirely, either attack or exploitation may give way to pursuit. The object of the pursuit is annihilation of the opposing force. It is conducted as a series of encirclements in which successive portions of the fleeing enemy are intercepted and captured or destroyed. Large-scale pursuits are rare in modern war, but they occur, as in the US Eighth Army's pursuit to the Yalu River in 1950. Like the exploitation, the pursuit is usually characterized by broad decentralization of control and rapid movement. Unlike the exploitation, however, the pursuit rarely can be anticipated, and forces are not normally reserved for it.

Exploitations and pursuits test the audacity and endurance of soldiers and leaders alike. Typically, an attack will disorganize the attacker nearly as much as the defender. Attacking forces will be tired. Units will have suffered losses of personnel and materiel, and as the exploitation or pursuit unfolds, lines of communication will become increasingly tenuous. Extraordinary effort will be required to sustain the momentum of the attack and thus translate tactical success into operational or even strategic victory.

Forms of Maneuver

Just as similar phases are common to all offensive operations, so similar forms of maneuver are common to all attacks. These forms of maneuver include envelopment, the turning movement, infiltration, penetration, and frontal attack. Although frequently used in combination, each attacks the enemy in a different way, and each poses different challenges to the attacking commander.

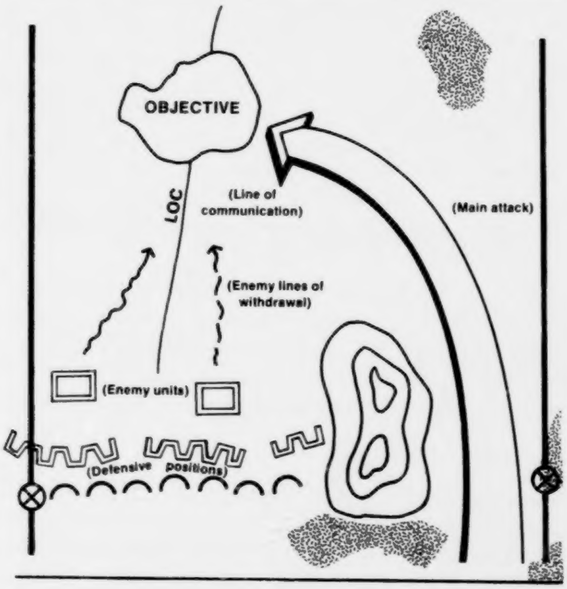


Envelopment. Envelopment is the basic form of maneuver in any doctrine that seeks to apply strength against weakness. Envelopment avoids the enemy's front, where forces are most protected and fires most easily concentrated. Instead, while fixing the defender's attention forward by supporting or diversionary attacks, the attacker maneuvers the main effort around or over the enemy's defenses to strike at the flanks and rear. Flank attacks are a variant of the envelopment, in which access to the enemy's flank and rear is furnished by the enemy's own forward movement. Single envelopments are directed against only one flank of the defending forces, while double envelopments attack both flanks. Either variant can develop into an encirclement if the attacking force is able to sever the defender's lines of communications (LOCs) and prevent reinforcement or escape.

Successful envelopment requires discovery or creation of an assailable flank. In meeting engagements and counterattacks, this may actually be the flank of the enemy force. In less fluid conditions, it is more likely to be a gap or weak point in the enemy's defense. Such gaps can be created by conventional, nuclear, or chemical fires, or by penetration before envelopment.

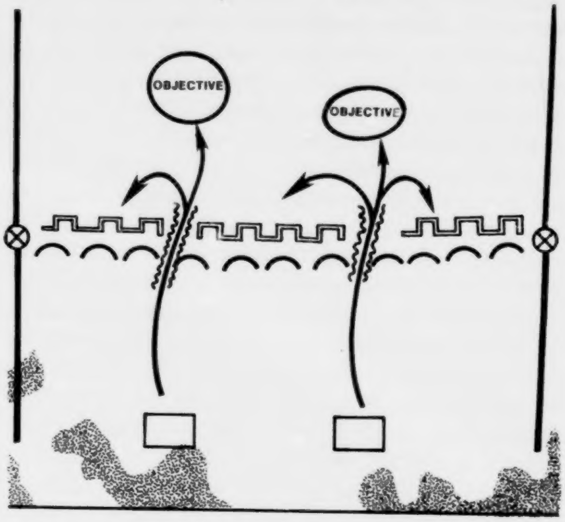
Envelopment typically requires less initial combat power than other forms of maneuver, since the attacker need not push through heavily defended prepared positions. However, envelopment places a premium on agility, since its success depends on reaching the enemy's vulnerable rear before the enemy can shift forces and fires.

TURNING MOVEMENT



Turning Movement. The turning movement is a variant of the envelopment in which the attacker attempts to avoid the defense entirely. Instead, the attacker seeks to secure key terrain deep in the enemy's rear and along the lines of communication. Faced with a major threat to the rear, the enemy force is thus "turned" out of its defensive positions and forced to attack rearward at a disadvantage. MacArthur's invasion at Inchon was a classic turning movement. Amphibious, airborne, and air assault forces are uniquely valuable for conducting turning movements. However, because they will have to fight beyond supporting distance of other ground forces, they will require heavy and continuous air and/or naval support.

INFILTRATION

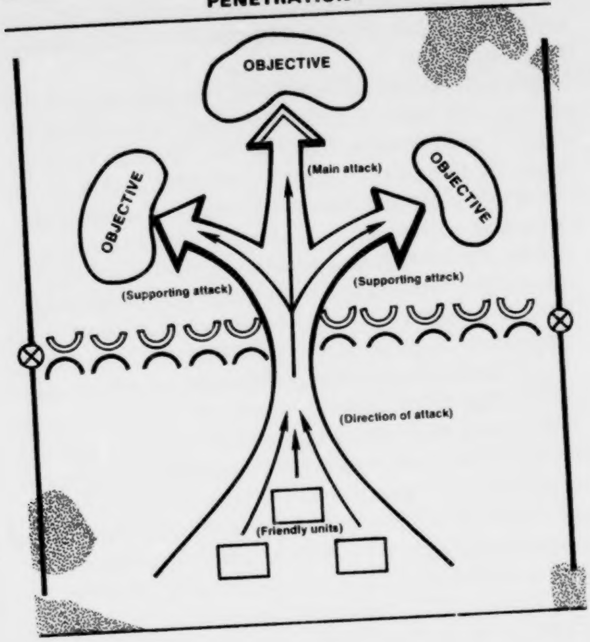


Infiltration. Infiltration is another means of reaching the enemy's rear without fighting through prepared defenses. It is the covert movement of all or part of the attacking force through enemy lines to a favorable position in their rear. Successful infiltration requires above all the avoidance of detection and engagement. Since that requirement limits the size and strength of the infiltrating force, infiltration can rarely defeat the defense by itself, but rather is normally used in conjunction with some other form of maneuver.

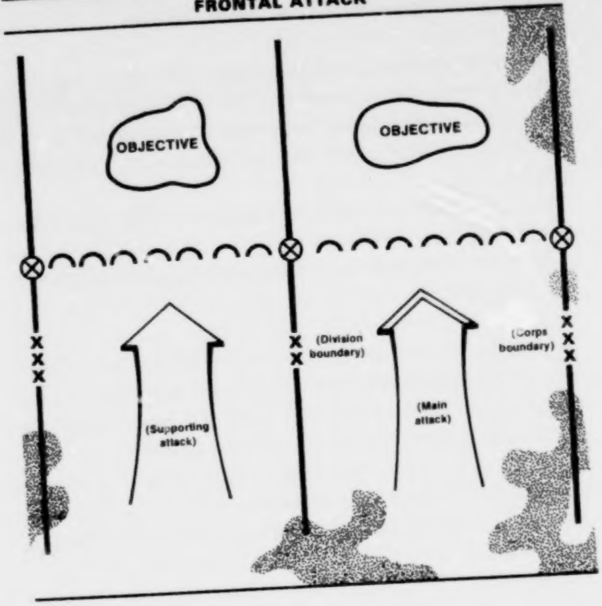
Infiltration is most feasible in rough terrain and reduced visibility, or in areas poorly covered by observation and fire. It may be used to attack lightly defended positions, or stronger positions from flanked and rear; secure key terrain in support of the main effort; or disrupt enemy rear operations.

Penetration. Penetration is used when enemy flanks are not assailable and when time does not permit some other form of maneuver. It attempts to rupture enemy defenses on a narrow front and thereby create both assailable flanks and access to the enemy's rear. Penetrations typically comprise three stages: initial rupture of enemy positions, roll-up of the flanks on either side of the gap, and exploitation to secure deep objectives. Because the penetration is itself vulnerable to flank attack, especially in its early stages, penetrating forces must move

PENETRATION


OBJECTIVE
(Main attack)
OBJECTIVE
OBJECTIVE
(Supporting attack)
(Supporting attack)
(Direction of attack)
(Friendly units)

FRONTAL ATTACK


OBJECTIVE
OBJECTIVE
(Division boundary)
(Corps boundary)
(Supporting attack)
(Main attack)

rapidly, and follow-on forces must be close behind to secure and widen the shoulders. Fire support must concentrate on suppressing enemy defenses quickly, then shift to protect the flanks of the attack.

Penetration may be attempted on one or several axes depending on the forces available. When feasible, multiple penetrations are desirable, since they disperse the enemy's fires and complicate commitment of reserves.

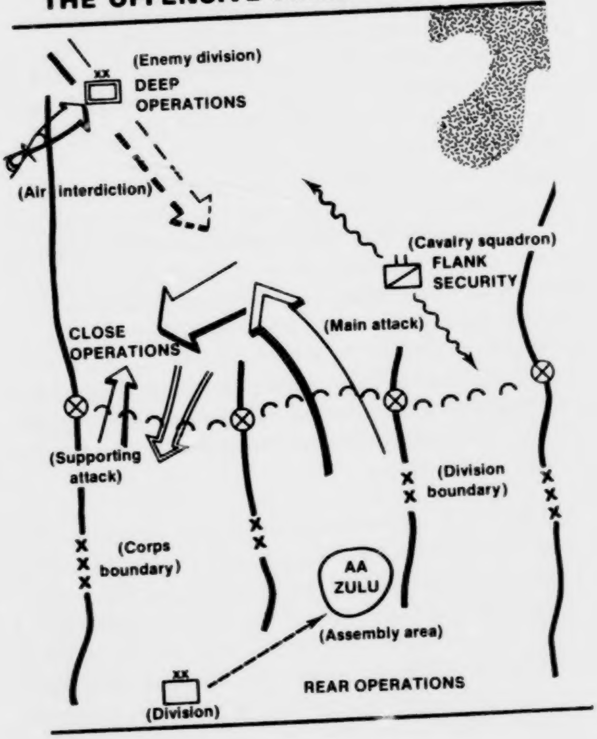
Frontal Attack. A frontal attack strikes the enemy across a wide front and over the most direct approaches. For deliberate attacks, it is the least economical form of maneuver, since it exposes the attacker to the concentrated fire of the defender while simultaneously limiting the effectiveness of the attacker's own fires.

As the simplest form of maneuver, however, the frontal attack is useful for overwhelming light defenses, covering forces, or disorganized enemy forces. It is often th best form of maneuver for a hasty attack or meetin engagement in which speed and simplicity are paramount or for exploiting the effects of nuclear or chemical fires Frontal attack may also be used during exploitation o pursuit, and by subordinate elements of a large formation conducting an envelopment or penetration.

Offensive Framework

A simple, complete concept of operation is the basi of all tactical offensive actions. The concept should permit rapid transition between offensive phases.

THE OFFENSIVE FRAMEWORK


(Enemy division)
DEEP OPERATIONS
(Air interdiction)
(Cavalry squadron)
FLANK SECURITY
(Main attack)
CLOSE OPERATIONS
(Supporting attack)
(Division boundary)
(Corps boundary)
AA ZULU
(Assembly area)
REAR OPERATIONS
(Division)

Corps and divisions make use of five complementary elements in fighting their offensive battles.

1. A main attack with supporting attacks as required.
2. Reserve operations in support of the attack.
3. A reconnaissance and security operation forward and to the flanks and rear of main and supporting attacks.
4. A continuous deep operation in vital parts of the zone of attack.
5. Rear area operations necessary to maintain offensive momentum.

Although some deep and rear activities conducted by higher echelons affect, and must therefore be coordinated with, brigade and subordinate units, the latter usually do not conduct separate deep and rear operations. These echelons, however, look for and anticipate enemy uncommitted forces that may affect accomplishment of the mission. They also provide all around security to include protection of logistic trains in the rear.

The commander organizes elements of the offensive framework for complementary functions in the conduct of the attack. In the close operation, reconnaissance and security forces—covering forces and advance, flank, or rear guards—locate the enemy and find gaps in the defenses. Also, these elements protect the force from surprise, develop the situation, and give the commander time and space in which to react to the enemy. The main and supporting efforts maneuver around or through enemy defenses to occupy objectives that permit the defeat of defending forces.

Reserves are positioned to weight the main effort. They exploit success, reinforce or maintain momentum, deal with enemy counterattacks, provide security, complete the destruction of enemy forces, and secure deep objectives. Or the reserves may open the next phase of a campaign or major operation by seizing objectives beyond the defended area.

Deep operations isolate enemy defenses, disorganize enemy reserves, and disrupt enemy support. Deep operations also complicate the reconstitution of the defense during withdrawal.

Rear operations assure freedom of action of committed and uncommitted forces. Rear operations protect necessary combat support and combat service support from disruption.

Corps, divisions, and maneuver brigades can perform any type of tactical offensive operation. Divisions, brigades, and battalions may also be employed as security forces, as elements of main or supporting attacks, as reserves, or, in some cases, as elements of deep or rear operations.

Maneuver battalions and companies attack, defend, delay, or move as part of their parent unit's operation. They form their own security elements and reserves as necessary.

All elements of an attacking force must be able to move quickly, change orientation rapidly, mass and disperse on the move, and accept new missions without loss of time or momentum. Synchronization must be preserved in spite of rapid movement, battle losses, and changes in the main effort. Units in all elements of offensive tactical operations must be prepared to defend when they are finally halted.

Summary

Offense is the decisive form of warfare—commander's ultimate means of imposing their will upon the enemy. The purpose for conducting offensive operations includes defeating the enemy, securing terrain, depriving the enemy of resources, gaining information, deceiving the enemy, holding the enemy in position, and disrupting the enemy attack. The characteristics of the offense are the preparation for battle, attacking the enemy, exploitation of the enemy, and pursuit of the opposing force. The forms of maneuver include the envelopment of a force, the turning movement, infiltration of a defense, penetration of front, and the frontal attack over a wide area. The essential elements of the offensive framework are the main attack, establishing reconnaissance and security forward, maintaining a reserve force to support the action, and continuous deep penetration of the enemy rear. Only offensive operations will win the war.

Defensive and Retrograde Operations

Defensive operations retain ground, gain time, deny the enemy access to an area, and damage or defeat attacking forces. Though they can sometimes deny success to the enemy, they cannot normally assure victory. At higher levels, even a defensive strategy designed to deny success will require offensive components to preclude defeat. For this reason, military theorists, such as Clausewitz, Jomini, and Sun Tzu, considered the defense the less decisive form of war, regarding it only as a temporary expedient unless mandated by higher strategic purposes.

A successful defense consists of reactive and offensive elements working together to deprive the enemy of the initiative. An effective defense is never purely passive. The defender resists and contains the enemy where necessary but seeks every opportunity to go over to the offensive. Early in a campaign or defensive battle, such opportunities will be local and limited. As the situation develops, they will become more numerous. This is especially true when the defender takes steps to uncover enemy vulnerabilities and to confuse or disorganize the enemy's force. When attackers expose themselves, the defenders' reserves or uncommitted forces counterattack. The defense that successfully destroys the coherence of enemy operations can ultimately defeat the uncoordinated forces.

While reactive measures may halt the enemy, early counterattacks improve the chances for success. The defense can greatly damage the enemy only when early counterstrokes accompany the reactive phase of the battle.

Purposes of Defensive Operations

Defensive operations are conducted to:

- Defeat an enemy attack.
- Gain time.
- Concentrate forces elsewhere.
- Control key or decisive terrain.
- Wear down enemy forces as a prelude to offensive operations.
- Retain strategic, operational, or tactical objectives.

The immediate purpose of any defense is to defeat the attack. Other purposes, though important, are ancillary from an operational perspective (they may, however, be overriding from a strategic perspective).

Defense is used to gain time for reinforcements to arrive or to economize forces in one sector while concentrating forces for attack in another. In either case, a defense or a delay may achieve these purposes.

In some instances, a force may defend because it is unable to attack. The defender then uses advantages of position and superior knowledge of the terrain to cause the enemy to overextend. Once the enemy forces have committed themselves against the defense and have been weakened by losses, the defender maneuvers to destroy them with fires or counterattacks.

In other cases, portions of a force may be required to retain key or decisive terrain or essential strategic, operational, or tactical objectives. Even in offensive operations, air assault, airborne, or amphibious forces may need to defend deep objectives until a larger force can link up with them. Whatever its larger purpose, the immediate challenge of any defensive operation is to recapture the initiative and thus create the opportunity to shift to the offensive. All activities of the defense must contribute to that aim.

Characteristics of Defensive Operations

Napolean's *Memoirs* contain his principles for conducting defensive campaigns. They can be summarized as: "The whole art of war consists of a well-reasoned and extremely circumspect defensive, followed by rapid and audacious attack." In any defensive plan preparation, disruption, concentration, and flexibility are fundamental.

Preparation. The defenders arrive in the battle area before the attackers. They must take advantage of their early occupation of the area by making the most thorough preparations for combat that time allows. At the operational level, this involves positioning forces in depth, wargaming campaign plans, and organizing the force for movement and support throughout the theater. It also involves mounting reconnaissance and surveillance operations forward of the defended area, mobilizing reserves and auxiliary forces, strengthening air defenses in critical areas, coordinating arrangements for joint and combined operations, and preparing deceptions to mislead the enemy.

At the tactical level, commanders plan fires, maneuver, and deep operations in support of their concepts of operations, wargame enemy options, and prepare deceptions to entrap the enemy. They prepare and conceal positions, routes, obstacles, logistical support, and command facilities in detail. Units use available time to train for and rehearse their specific tasks. Preparation of counterattack positions and routes, alternatives for deep interdiction, and measures for maintaining freedom of action in the rear area (traffic control, air defense, rear operations planning) are as important as siting, protecting, and hiding battle positions.

Initially the defenders will ordinarily be outnumbered. In the early stages of battle, they will capitalize on the advantage of fighting from prepared positions of their own choice. As the action develops, however, opportunities will arise for the defenders to take the initiative. They must prepare for these opportunities with preconceived maneuver and fire plans. This is done by designating counterattack forces and making counterattack plans to support their defense and for eventual reversion of their whole force to the offense.

Disruption. To counter the attackers' initiative and to prevent them from concentrating overwhelming combat power against a part of the defense, the defenders must disrupt the synchronization of the enemy's operation. This may be done by separating enemy forces, and by interrupting their fire support, logistical support, or command and control. It may also be done by breaking the tempo of their operation, or by ruining the coordination of the enemy combined and supporting arms.

At the operational level, the commander disrupts the enemy attack with spoiling operations, special operations forces, deception, psychological operations, and air interdiction of critical routes, forces, and facilities. The theater commander may also prevent synchronized enemy action by fighting battles that prevent the junction of separated enemy forces. Or the commander may take the initiative temporarily to deny the enemy opportunities to prepare deliberate attacks without interference. The attacker's operational reserves and air forces will almost always be primary objectives of disruptive air and ground attacks.

Tactical commanders disrupt the enemy's synchronization by defeating or misleading the reconnaissance forces, impeding maneuver, disrupting reserves, neutralizing artillery and air support, and interrupting command and control. Defensive techniques vary with circumstances, but all defensive concepts of operation should aim at spoiling the attacker's synchronization. Deep interdiction, counterattack, counterbattery fires, obstacles, electronic warfare (EW), retention of key or decisive terrain, and, when authorized, nuclear or chemical fires must likewise be used to prevent the enemy from concentrating irresistible strength against portions of the defense.

Concentration. The defenders must concentrate at the decisive time and place if they are to succeed. They will have to mass enough combat power to avoid defeat throughout the battle and, if they are to defeat the attacker, they must obtain a local advantage at points of decision. To do this, the defender must normally economize in some areas, retain (and, when necessary, reconstitute) a reserve, and maneuver to gain local superiority elsewhere. Generally, the defender will have to surrender some ground to gain the time necessary to concentrate forces and fires.

In defensive campaigns, large unit commanders mass against separated enemy forces or concentrate their defenses in the areas of greatest risk. They may concentrate by throwing reserves against the enemy early in the campaign to bring on a quick decision or they may defer concentration for decisive battle until favorable terms of combat can be obtained.

Operational concentration can also be obtained by organizing defenses of great depth that force the attacker to fight a series of battles against echeloned defenses. Theater commanders and their chief subordinates use aerial, cannon, and missile fires to assist and complement the concentration of land forces.

Tactical commanders have less time to respond and will normally have to concentrate combat power repeatedly during battle. Effective reconnaissance and security forces are vital to give tactical commanders time to discern the form of the attack and to concentrate forces and fires against it.

Periods in which the defender can develop superior combat power will be brief, so concentration will have to be rapid and violent. Commanders will have to accept risks in some areas to concentrate for decisive action elsewhere. Obstacles, security forces, and fires can assist reducing these risks. Since concentration increases the threat of large losses from nuclear fires, the massing of forces must be masked by concealment and deception. As quickly as the attacking force has been defeated or halted, defending forces must disperse.

Flexibility. Defensive operations require flexible planning and execution. In exercising the initiative, the attacker first decides where and when combat will take place. The defender must be agile enough to counter or evade the attacker's blow, then strike back effectively.

Defensive campaigns depend on branches and sequels to defensive battles for their flexibility. Large unit commanders must be prepared to fight the enemy effectively no matter what the form of the attack. They must anticipate the enemy's offensive moves and prepare counteractions for the likely outcomes of battles. Retention of operational reserves is indispensible to flexibility at the operational level. These forces are usually positioned in depth and assigned contingency missions that they may be called on to perform before, during, or after battle.

Once the campaign is under way, plans must be adjusted to conform to the situations and commanders must be prepared to react quickly to the enemy. The defensive campaign plan should allow the greatest possible freedom of action. It should preserve balance by disposing forces so that commanders can respond to crisis and pass quickly to the attack whenever the opportunity arises.

Tactical flexibility rests on detailed planning, organization in depth, and retaining reserves. The plan must enable commanders to shift their main effort quickly without losing synchronization. Tactical commanders organize their defenses to defeat any approach the enemy might make. They add flexibility to their basic plans by designating supplementary positions in depth and counterattack plans that can be ordered into effect during battle.

Static elements of the defense organize for all-around security and plan alternate and supplementary positions that allow them to move forward, laterally, or to the rear if required. Fire planning covers all approaches and is organized to accommodate changes in priority. Deep operation options are developed for all likely variations on the basic concept of operation. Engineer, aviation, EW, and combat service support are concentrated in support of the main effort, but provisions are also made for shifting that support if necessary. Reserves prepare to move anywhere in sector and make counterattack plans to cover all likely contingencies.

Once the attacker has been controlled, the defenders can operate against the attackers' exposed flanks and rear. The defenders, under the cover of their own field artillery and air defense, can then maneuver over ground they have reconnoitered and prepared against extended elements of the attacking force.

The tenets of AirLand Battle doctrine—initiative, agility, depth, and synchronization—apply to any successful defense. Whatever their specific form, defensive operations:

1. Seize the tactical initiative locally and then generally as the entire force shifts from defense to offense.
2. Maintain agility and flexibility in using fire, maneuver, and electronic warfare to set the terms of battle. Once attackers have committed themselves, the defender should adjust the operation to concentrate all efforts toward containing, isolating, and defeating the committed enemy force. By interdicting enemy movement in depth and concentrating repeatedly to develop local advantages against the attackers, the defender can win the battle by defeating the enemy piecemeal.
3. Fight the enemy forces throughout the depth of their formations to delay them, to disorganize them, and to create opportunities for offensive action. The defender must organize forces and resources in depth to gain time and space for flexibility and responsive maneuver.
4. Synchronize all available combat capability. Violent execution of flexible plans and aggressive exploitation of enemy vulnerabilities can halt the attacking force and offset or overcome the attacker's numerical advantage.

Alternative Defensive Patterns

Defensive operations may take a wide variety of forms; traditional usage divides defensive arrangements into two broad categories. *Mobile defenses* focus on the destruction of the attacking force by permitting enemy forces to advance into a position that exposes them to counterattack and envelopment by a mobile reserve. *Area defenses* focus on the retention of terrain by absorbing enemy forces into an interlocked series of positions from which they can be destroyed largely by fire.

Although these descriptions convey the general pattern of each type of defense, both forms of defense employ both static and dynamic elements. In mobile defenses, static defensive positions help control the depth and breadth of enemy penetration and assure retention of ground from which to launch counterattacks. In area defenses, mobile reserves cover the gaps among defensive positions, reinforce those positions as necessary, and are available to counterattack key defensive positions should they be lost to the enemy. Typically, defending commanders will combine both patterns, using static elements to delay, canalize, attrit, and ultimately halt the attacker. Also, they will use dynamic elements—spoiling attacks and counterattacks—to strike and destroy the attackers' committed forces. The balance among these elements will depend on the unit's mission, composition, mobility, and relative combat power, and on the character of the battlefield.

Mobile Defense. Mobile defenses employ a combination of offensive, defensive, and delaying action to defeat the enemy attack. Their exact design varies from case to case and must be described in detail in each instance. Commanders conducting mobile defense deploy relatively small forces forward and use maneuver supported by fire and obstacles to wrest the initiative from the attacker after the attacker has entered the defended area.

A force conducting a mobile defense must have mobility equal to or greater than the enemy's. It must also be able to form the large reserve that will conduct the decisive counterattack. Since doing so will almost invariably require thinning committed forces, a mobile defense cannot be conducted unless the temporary loss of some terrain is acceptable.

Because of the requirement to form a large reserve, mobile defense is normally conducted by division and larger formations. However, large brigades and cavalry regiments may be able to conduct this form of defense in some circumstances. In any case, heavy forces are required for the reserve and may also be used as security forces or to contain anticipated penetrations. Light forces in a mobile defense are usually employed to hold strongpoints in suitable terrain within or adjacent to the area of the enemy's penetration, or in some cases, to stop the enemy during the counterattack.

Area Defense. An area defense is usually conducted to deny the enemy access to specific terrain for a specified time. Since, unlike the mobile defense, area defense does not promise outright destruction of the attacking force, area defense presumes some other simultaneous or subsequent operation to achieve decisive defeat of the enemy.

In an area defense, the bulk of defending forces are deployed to retain ground, using a combination of defensive positions and small mobile reserves. Commanders organize the defense around the static framework provided by the defensive positions, seeking to destroy enemy forces by interlocking fires or by local counterattack of enemy units penetrating between defensive positions. Both light and heavy forces may conduct area defense. When a defending force is predominantly light, such a defense is usually required.

Unlike mobile defense, for which considerable depth is essential, area defense may be conducted in varying depth, depending on the mission, forces available, and the nature of the terrain. Where necessary, the commander may make the main effort well forward, committing most of the combat power to the forward edge of the battle area (FEBA) and planning to counterattack early, when enemy forces are still along the FEBA or even beyond it. Though such a forward defense may often be necessary, it is more difficult to execute than a defense in greater depth. This is because its early commitment to decisive combat makes it less flexible, hence more dependent on rapid identification of and concentration against the enemy main effort.

When the mission is less restrictive, forces are available, and advantageous terrain extends deep into the defensive sector, the commander may organize the defense in greater depth. In extremely wide sectors, divisions and corps may need to defend in depth to gain the time to concentrate against the enemy.

When area defense is conducted in depth, elements in the security area identify and control the enemy's main effort while holding off secondary thrusts. Counterattacks on the flanks of the main attack then seal off, isolate, and destroy penetrating enemy forces. In the extreme, therefore, an area defense in depth begins to look much like a mobile defense.

Defensive Framework

A simple, complete concept of operations is the basis of all defenses. Field armies, corps, and divisions fight a unified defensive battle consisting of complementary deep, close, and rear operations. Defenses are organized into five complementary elements: (1) security force operations forward and to the flanks of the defending force, (2) defensive operations in the main battle area (MBA), (3) reserve operations in support of the main defensive effort, (4) deep operations in the area forward of the forward line of own troops (FLOT), and (5) rear operations to retain freedom of action in the rear area.

The commander must synchronize all five of these elements in the execution of the defensive plan. If only a screening force is employed, it gives warning of the enemy's approach and harasses advancing enemy forces. If a covering force is used, it meets the enemy's leading forces, strips away enemy reconnaissance and security elements, and reports the attacker's strength and locations. A covering force also gives the commander time and space in which to react to the enemy.

Defensive operations slow, canalize, and defeat the enemy's major units. Defending commanders may do this in a number of ways. In most cases, however, they will have to fight a series of engagements to halt or defeat enemy forces. This will require defending commanders to designate a main effort, concentrate in support of it, then shift it to concentrate against another threat, and do so repeatedly. Maneuver units will defend, delay, attack, and screen as part of the defensive battle.

Reserves will be committed throughout the defense and will have to be continually reconstituted as previous reserves enter the battle. Reserves give commanders the means to seize the initiative and preserve their flexibility. Reserves are best employed to strike a decisive blow against the attacker, but they must be prepared to perform other missions as well.

Deep operations will disrupt the enemy's movement in depth, destroy high-value targets vital to the attacker, and interrupt enemy command and control at critical times. Forward security elements not forced back by the enemy hold their positions to provide deep observation and target acquisition, and to retain ground from which to launch future counterattacks by maneuver and fire.

Operations in the rear-area protect and sustain command and control and combat service support operations. Their chief function during battle in the MBA is to protect the commanders' freedom of action by preventing disruption of command and control, fire support, logistical support, and movement of reserves.

Conducting Defensive Operations

Clausewitz characterized the ideal defense as a "shield of blows." Defenders use their prepared positions and knowledge of the ground to slow the attackers' momentum and to strike the attackers with repeated, unexpected blows. They disrupt the attackers' synchronization, degrade the attackers' strength and ability to concentrate, and defeat the attackers' force with effective manuever supported by flexible firepower. The defenders need not kill every enemy tank, squad, or fieldpiece; they need only destroy the ability of the enemy force to sustain forward movement.

Defensive Campaigns and Major Operations

Generally, commanders undertake the defense only when the strategic, operational, or tactical situation makes it impossible to conduct offensive operations or to economize forces to permit an attack elsewhere. To win, they must preserve their own force through successful defense, weaken the enemy, and then take the initiative. In some cases, commanders can secure theater objectives through the tactical offensive actions of a defensive campaign. More commonly, success will require following a successful operational defense with an offensive campaign.

When possible, commanders conducting a defensive campaign attempt to defer decisive battles until they can win. This may entail exhausting the enemy in protracted minor battles, withdrawing into friendly territory, or absorbing the enemy's initial impetus in one area while attacking the lines of communications and bases of support. When strategic direction requires the retention of territory near a political border or the control of such vital areas as political capitals, industrial regions, or population centers, the campaign may have to be fought well forward in the theater. In other cases, a theater may be defended through a series of offensive blows delivered as the enemy masses or approaches a defended area.

As in offensive campaigns, defending commanders try to identify centers of gravity as they design their campaign plans. Sources of enemy strength—critical fighting units, command or support facilities, politically significant areas, or allied units—may constitute such centers of gravity. Successful defense of a contested region or the mere denial of success to the enemy over a long period of time may also strike a center of gravity.

Defensive campaigns have varied in form considerably. One of these forms is awaiting the enemy's attack in forward positions then striking back immediately after the first battle. Another form is preempting the enemy attack with spoil-attacks as soon as the enemy is reached. Still other forms include fighting a series of inconclusive battles to resist and wear down the enemy, and drawing the enemy deep into friendly territory to exhaust and overextend the enemy forces.

Whatever the design, commanders conducting defensive campaigns mix offensive with defensive tactical actions and contest the initiative in the theater at every opportunity. They should consider their offensive actions carefully but should accept calculated risks to avoid becoming excessively passive. As a rule, whatever concept of operation is adopted should reflect the greatest possible use of mobility, surprise, and offensive tactics. The utlimate objective should be to turn to the offensive and to defeat the enemy decisively.

Defenders attempt to defer a decision in the campaign until they can fight on advantageous terms. This means that defending commanders must accurately sense the attackers' culminating point—that time when the attackers have exhausted the offensive potential. The defenders try to hasten the attacker's arrival at that point throughout the campaign. After this has been done through a series of defensive battles (or, occasionally, after a single defensive battle) the defender will be able to shift to the attack.

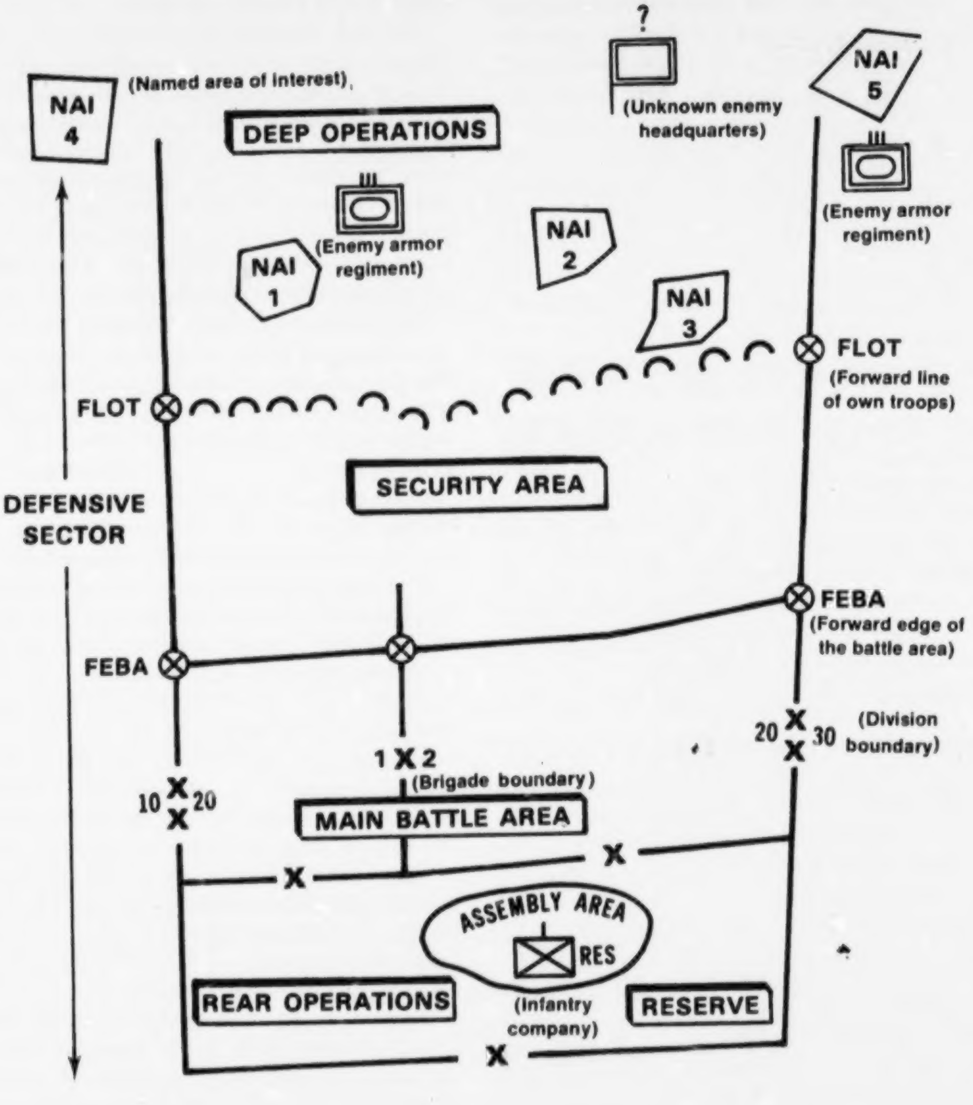
In any defensive campaign, the defender must prevent the attacker from overturning the defense in a single battle. Defensive preparations must therefore stress depth in dispositions and in planning. The retention of some forces in depth is especially vital early in a campaign when flexibility is most important to the defender.

The campaign plan must anticipate likely enemy courses of action and must contain "branches"—variations that enable the commander to cope with them. It must also provide for battles in depth following the first phase of the campaign. This means that logical sequels must be planned as a basis for actions following the first battles. These sequels should assist the commander and chief subordinates in anticipating actions after a tactical success, a setback, or a stalemate.

Because the attacker will normally attempt to push forces into the depths of the defended theater early in the campaign, the defending commander should hold operational reserves in depth. These may be employed to engage the enemy's operational reserve, to extricate committed units after battle, to exploit tactical success by imposing greater losses on the enemy, or to seize the operational initiative after a defensive victory.

In preparing for a defensive campaign, commanders must consider the logistical base that will support their operation and the limits and vulnerabilities that it imposes on them. Commanders must also take into account the routes and obstacles in the theater, bearing in mind, the effect these factors have on the defenders and on the attacker. When time permits it, the improvement of routes and obstacles can have a substantial effect on the conduct of the campaign.

THE DEFENSIVE FRAMEWORK


NAI 4
(Named area of interest)
DEEP OPERATIONS
?
(Unknown enemy headquarters)
NAI 5
(Enemy armor regiment)
NAI 1
(Enemy armor regiment)
NAI 2
NAI 3
FLOT
FLOT
(Forward line of own troops)
SECURITY AREA
DEFENSIVE SECTOR
FEBA
FEBA
(Forward edge of the battle area)
20 X X 30
(Division boundary)
1 X 2
(Brigade boundary)
10 X X 20
MAIN BATTLE AREA
X
X
ASSEMBLY AREA
RES
(Infantry company)
REAR OPERATIONS
RESERVE
X

Plans for ground operations must be coordinated with air operations to assure that the two are synchronized and that the capabilities of air power are fully exploited. Similarly, plans for air defense should be made carefully to support the concept of the operation and to allow for the greatest possible operational flexibility.

The campaign plan itself should set clear objectives for the major ground and air forces in the theater. Long-term objectives should be stated and specific objectives should be assigned for the current phase of the campaign. Theater commanders should anticipate when and where battles are likely to take place and organize their forces accordingly. Although they will not hold the initiative early in the campaign, commanders should define for themselves and their major subordinates the conditions under which they will accept decisive battle.

Whatever its overall concept, the first phase of a defensive campaign plan must control the enemy's attack while preserving the defending force. In particular, the attacker's operational reserves must be contained or defeated. Commanders may disrupt its progress in the enemy's rear, contain it as part of the defensive battle or fight it in a separate battle using their own operational reserve.

To succeed, operational level commanders must also take risks. This commonly means that they must economize in areas of low immediate danger to concentrate forces against the more dangerous threats. They will also have to risk offensive actions when the enemy presents them with opportunities to defeat isolated forces.

In assessing risks, commanders should take the long view to determine whether the risk is justified. In some cases, defenders benefit more from delaying offensive actions until their strength has improved; just as often, however, defenders reach a point at which they must act or lose the opportunity to take the initiative for an extended period, or even permanently. In the latter case, defenders may face a choice between a slim chance for immediate success at great risk or a prolonged defense with no prospect of winning.

Tactical Defense. Tactical defenses will occur in both offensive and defensive campaigns. Subordinate units of a defending force may be ordered to attack, delay, withdraw, screen, or defend in execution of the overall commander's plan. The purpose of the force's operations, however, will remain to stop or to defeat the attacker.

Defensive doctrine is not prescriptive. It descibes two general forms of defense at tactical levels—area and mobile—but it leaves commanders great freedom in formulating and conducting their defense. Defending commanders may elect to defend well forward by striking enemy forces as they approach. Commanders may opt to fight the decisive battle within the main battle area (MBA). Or, if they do not have to hold a specified area or position, they may draw the enemy deep into the area of operations and then strike the flanks and rear. Commanders may even choose to preempt the enemy with spoiling attacks if conditions favor such tactics. In the past, all four methods have proven effective.

Brigades and divisions perform major defensive tasks for their superior headquarters. They are usually responsible for substantial sectors of a defense or serve as reserves. Brigades, like cavalry regiments, may also serve as covering forces or security elements forward or to the rear of the MBA. Maneuver battalions defend as part of a larger force. They perform a single task as part of their brigade's mission. They defend, delay, attack, or screen. Although battalions provide for their own security and support in any operation and may retain reserves, their main role is to cooperate with other battalions in the brigade's defense.

A simple concept of operations, flexible enough to meet the enemy wherever the enemy chooses to attack, is essential to success. Commanders tailor their defensive concept to their specific situation, paying particular attention to operations against the enemy in depth and to the wise use of available time.

Deep Operations. Whatever type of defense is selected, deep operations are essential to its effectiveness. Commanders use them to create windows of opportunity for decisive action against leading enemy echelons. Deep operations are the commanders' means of ensuring the success of their decisive engagements and counterattacks by limiting the enemy's options, disrupting the enemy's coordination, and affecting the closure times of follow-on elements.

Areas of operations and interest must extend far enough forward of the FLOT to give commanders time to react to approaching enemy forces, to assess their options, and to execute operations accordingly. Deep operations begin before the enemy closes with the maneuver forces. They continue against follow-on or uncommitted forces to isolate combat in the security area and MBA, to guard against interference with the commitment of reserves, and to shape the conditions of the next set of defensive engagements.

In conducting deep operations, commanders maintain a current intelligence picture of the enemy throughout their area of interest. At the same time, commanders focus their collection effort on areas and units of particular concern. To conduct successful deep operations, the operations officer (G3), intelligence officer (G2), and fire support coordinator (FSCOORD) must cooperate to assure that actions in depth support the central concept of the defense. They must especially ensure that resources employed in deep operations do not divert resources necessary to win key close engagements.

As enemy formations approach the FLOT, commanders monitor the enemy forces' movements and determine which elements of the enemy force are most threatening to their plans. Also, commanders seek and attack high-value targets, and disrupt and delay selected enemy reserves to facilitate specific actions within their overall defense. For example, a division commander might act to isolate an enemy regiment by interdicting forces that could reinforce or support it during a division counterattack.

Tactical air power, field artillery fires, Army aviation, and unconventional warfare forces are the chief means of conducting deep operations. Because they are usually limited in number and effect, commanders must synchronize their use carefully with the overall effort. Generally, more sensors and weapons become available as the enemy nears the FLOT. Effective employment of maneuver units in deep operations requires careful planning and intelligence preparation of the battlefield (IPB) before commitment and responsive surveillance once operations are under way.

Security Operations. In any defense, a covering force or screening force serves as the forward security echelon in close operations. The security force occupies a sector far enough forward of the forward edge of the battle area (FEBA) to protect MBA units from surprise. This action gives MBA commanders time to reposition forces to meet the enemy attack and to prevent enemy medium-range artillery from firing on the FEBA. A screening force will be unable to do more than that. A covering force gains and maintains contact with attacking enemy forces, and can also develop the situation, and delay or defeat the enemy's leading units.

Screening forces. Screening forces may be preferable to covering forces in some defenses. Screening forces repel enemy reconnaissance and keep enemy artillery from firing on the FEBA. They give the commander warning of the enemy's approach and expose the enemy to indirect fire, but they cannot delay the attacker significantly. Some reinforcement of screening forces is usually necessary. Aviation, radar, engineer, and field artillery (FA) units all add to the effectiveness of a screen.

Covering forces. Corps and division commanders may establish a covering force as the first echelon of a two-echelon defense. When this is done, the covering force fights a major action to destroy leading enemy formations, to cause the commitment of follow-on battalions or regiments, and to force the enemy to disclose the main effort. Covering forces also furnish information that allows MBA commanders to shift forces before the enemy's arrival at the FEBA. The stronger the covering force, the more time it can provide for corps or division commanders to establish their defenses in the MBA.

The size and composition of a covering force depends on the mission, enemy, terrain and weather, forces available, and time. Normally, a covering force is organized around tank-heavy task forces and regimental cavalry. Ideally, a corps will employ one or more armored cavalry regiments because they are specially organized, trained, and equipped for security missions. Corps may use divisions or separate brigades instead of cavalry or in addition to it. A light corps may use air cavalry, light armor, or air assault infantry in its covering force area (CFA). In any case, a covering force requires appropriate additional artillery, engineer, military intelligence (MI), air defense artillery (ADA), and Army aviation units to perform its mission.

Either corps or its divisions control the covering force. Covering forces should not be controlled by brigades except where the terrain makes other solutions impractical. Whether corps or divisions control depends on the overall plan for defense, the size of the CFA, the number of battalion-size units to be employed, and the time that MBA units have for preparing.

Corps and division operations officers monitor covering force operations and ensure their synchronization with deep operations. Above all, covering force operations must be an integral part of the overall defensive plan.

Battalions and squadrons of the covering force make maximum use of the terrain and the force's long-range fires. Carefully planned indirect fires and obstacles augment the firepower of the covering force and assist it in avoiding decisive engagement. A covering force operation based solely on delay, however, will rarely provide the degree of protection the larger force requires. Normally, the covering force will defend, delay, and attack with its maneuver units.

The entire covering force should not be withdrawn automatically just because portions of it have been forced back to the FEBA. It should adjust to the enemy advance and, where possible, continue to fight or screen far forward. Retaining such advanced positions allows surveillance and targeting forward of the MBA, upsets the enemy's coordination by resisting supporting attacks and reconnaissance effort, and assists the MBA commander to fight one opponent at a time. Finally, retention of advanced positions by elements of the covering force can facilitate counterattack forward of the FEBA by providing observation of and access to the flanks of penetrating forces. In some cases, covering force elements themselves can attack first echelon forces from the rear or drive between echelons to isolate leading enemy units.

Handover. Handover of the battle from the security force to MBA forces requires close coordination. Security force commanders must retain freedom to maneuver until the force begins rearward passage of lines. Commanders of MBA forces must establish contact points, passage points, passage lanes, and routes through the MBA. Usually, battalion-size units of a covering force hand the battle over to the brigades through which they pass. Screening forces will be much smaller; they will not be able to affect the enemy's movement significantly but must be able to warn MBA commanders of the enemy's approach. These actions must be completed quickly and efficiently to minimize the vulnerability of both the main battle area and the covering forces.

After passage, elements of the security force normally move to designated areas in the rear area or MBA to prepare for subsequent operations. Those areas must be rearward enough to ensure the withdrawn units do not interfere with MBA operations.

Control of indirect fires passes to MBA units as the security force hands off the battle. This usually occurs in one sector at a time until the security force has been completely withdrawn.

Main Battle Area. Whatever the concept of operation, the decisive defensive battle is fought by forces of the MBA. Commanders position forces in the MBA to control or repel enemy penetrations. They employ their reserves there to halt the attack, to destroy penetrating enemy formations, and to regain the initiative.

Division and corps commanders establish MBA sectors as means of implementing their plans. These are assigned to subordinate units based on their capabilities and missions. Each sector usually coincides with a major avenue of approach. The force responsible for the most dangerous sector in the MBA normally receives priority in the initial allocation of artillery, engineer, and close air support. It is usually the initial main effort. Commanders can strengthen their defense of the most dangerous approach by narrowing the sector of the unit astride it. They may use armored cavalry units or other maneuver forces to economize in restrictive terrain and to concentrate the major units on the most dangerous approaches. However, commanders must do so without splitting secondary avenues of approach.

A significant obstacle along the FEBA, such as a river, built-up area, swamp, or escarpment, favors an area defense, oriented on the retention of terrain. Such an obstacle adds to the relative combat power of the defender. An area defense may also be structured with elements deployed in depth throughout the MBA.

Open terrain or a wide sector favors mobile defenses that orient on the enemy. The primary function of committed units in such defenses is to control the penetration until it can be eliminated by the counterattack of a large reserve. Obstacles must be used even in open terrain to support static elements of the defense and to slow or canalize the enemy in vital areas.

Corps and division commanders monitor the development of MBA operations and support critical engagements with additional firepower. They may also adjust sectors, control movement of committed forces, or reinforce MBA units with fresh maneuver forces. Corps and division commanders intervene at decisive junctures in the battle with reserves and with close air support.

As MBA operations progress, corps and division commanders continue to conduct deep operations. They monitor events beyond the forward line of own troops (FLOT) and strike follow-on enemy forces to prevent them from outflanking defensive positions or overwhelming committed forces.

Brigades and divisions fight combined arms actions and are usually responsible for defense of sectors. In mobile defenses, brigade and division commanders bear responsibility for major tasks that must be closely synchronized with the activities of other units. In an area defense, they function more independently and operate with fewer restrictions.

Commanders of brigades and divisions employ units of all arms and services. They coordinate and support the actions of maneuver units to locate, contain, and strike attacking units throughout the defense. They use fires, obstacles, and electronic warfare (EW) to strengthen defended postions and to support maneuver.

Battalions usually perform a single task in a defense directed by a brigade. They defend positions or strongpoints, delay, or attack to defeat enemy units or to regain important positions. Battalions may hold companies in reserve to provide depth and flexibility in their operations.

Mobile enemy forces are likely to penetrate sections of the MBA during the defense. Such penetration and separation of adjacent units are especially likely if nuclear or chemical weapons are used by the enemy. Nonetheless, MBA forces continue to fight while protecting their own flanks, striking at the enemy's, and driving across penetrations to restore continuity to the defense when possible. Division or corps reserves can defeat some penetrations but others may pass into the rear area.

Reserve Operations. The primary purpose of reserves in the defense is to preserve the commander's flexibility. Commanders may use reserves to counterattack to exploit such enemy vulnerabilities as exposed flanks or support units, unprotected forces in depth and congestion. Commanders may also use reserves to reinforce forward defensive operations, to block penetrating enemy forces, or to react to a rear-area threat. If the reserves are intended to be used decisively, however, commanders must withhold them for major counterattacks and refuse to dissipate them, dealing with local emergencies.

Commanders should decide the mission, composition, and size of the reserve based on their estimate of the situation. It is impossible to generalize about the relative importance of counterattacking, blocking penetrations, reinforcing defending units or reacting to rear-area threats. Each situation is unique. The primary mission of the reserve derives directly from the concept of the defense. Defenses at the dynamic end of the continuum such as mobile defenses rely upon reserves to strike the decisive blow. They demand large mobile combined arms reserves. When conditions favoring counterattack occur, the main effort shifts to the reserve, which then strikes with overwhelming combat power. Defenses at the static end of the spectrum are more likely to use reserves to block and reinforce at lower tactical levels, leaving major counterattacks to divisions, corps, and higher echelons. However, even area defenses at brigade and battalion level may benefit from the use of mobile reserve to strike a decisive blow when such a force is available and the enemy uncovers the flanks.

Commanders of brigades and larger units normally retain about one third of their maneuver strength in reserve, though the actual size of the reserve depends on the commander's concept of operation. Reserves may also be retained at battalion level, but, just as frequently, battalion commanders counterattack with their least committed elements or with elements positioned in depth.

Timing is critical to counterattacks. Commanders must anticipate the circumstances calling for the commitment of reserves. When they commit their reserves, they must make their decision promptly with an understanding of movement and deployment times. Committed too soon, reserves may not have the desired effect or may not be available later for a more dangerous contingency. Committed too late, the reserves may be ineffectual. Once commanders have committed their reserves, they should immediately begin reconstituting other reserves from uncommitted forces or from forces in less-threatened sectors.

In planning a counterattack, commanders must carefully consider the enemy's options and the likely locations of follow-on echelons. Then commanders must determine where to position their reserves, what routes and avenues of approach to use, what fire support will be necessary, and what interdiction or deep attack will be necessary to isolate the enemy's committed forces. Counterattacks like any attack should seek to avoid enemy strength. Brigade and battalion counterattacks seize strong positions from which to fire on the enemy's flanks and rear. Division or corps counterattacks will either strike isolated enemy maneuver units or will pass around the enemy's committed forces to strike directly at reserves, artillery, and other supporting forces.

Reserves may be air or ground maneuver units. Divisions, brigades, and battalions may be held in reserve as part of their superior commander's defense. When counterattacking, their actions amount to hasty or deliberate attacks.

Reserves air assault forces can respond rapidly. In suitable terrain, they can reinforce postions to the front or on a flank. In a threatened sector, they may be positioned in depth. Air assault forces are also suitable for swift attack against enemy airborne units landing in the rear area. Once committed, however, they have limited mobility.

Because of their speed, mobility and range, attack helicopter units may be held in depth initially and still respond promptly when needed. The mobility and firepower of attack helicopters often make them the quickest and most effective means of reinforcing defenses against armored attacks and of destroying enemy tanks that have broken through. Since weather and the air defense environment limit their use, they should never be the only reserves.

In addition to designating reserves, commanders may choose to shift uncommitted subordinate elements to reconstitute a reserve or to concentrate forces elsewhere. The most easily shifted forces are the reserves of subordinate units. Commanders should shift committed MBA forces laterally only as a last resort because of the risks and difficulties inherent in such lateral movement close to the line of contact.

Rear Operations. During battle, protection of rear areas will be necessary to assure the defender's freedom of maneuver and continuity of operations. Because fighting in the rear area can divert combat power from the main effort, commanders must carefully weigh the need for such diversion against the consequences and be prepared to take calculated risks in rear areas. To make such decisions, commanders require accurate information, both to avoid late or inadequate responses and to guard against overreacting to exaggerated reports. They also require clear heads and strong nerves.

To minimize the vulnerability of rear operations, command and control and support facilities in the rear area must be dispersed and redundant. Also, they should be high speed avenues into the rear as mission performance will allow. Air should be located to protect especially sensitive areas and facilities in the rear. Reserves must be prepared to respond rapidly to rear-area threats and should be prepared to move to any of their objectives by multiple routes. Air assault forces, attack helicopter and air cavalry units, close-air-support missions, and mechanized forces will be of special value in the rear area.

Threats to the rear area will arise throughout the battle and may require the repositioning of forces and facilities. When possible, the defending commander should contain and avoid enemy forces in the rear area rather than attacking them with forces needed in the MBA. Unless such enemy units pose a serious immediate threat, the defending commander should defer attacking them until after the battle is stabilized or won. For a detailed discussion of rear operations, see FM 90-14, *Rear Battle*.

Executing the Defense

As the attack begins, the defender's first concerns will be to identify the enemy's committed units, determine the direction of attack, and gain time to react. Security forces, intelligence units, special operations forces, and air elements conducting deep operations will be the first sources of this information. Information about the form and location of the enemy's attack should be distributed throughout the force during the battle as a basis for subordinate commander's actions.

Commanders must slow the enemy's movement in some areas or separate their formations to deny the enemy the ability to mass or to establish a tempo that will make defense impossible. Defending commanders will usually have to economize in some parts of their sectors to concentrate forces and fires in the areas of greatest danger. They should employ their long-range surveillance means to assist in monitoring economy-of-force sectors.

Covering forces and ground or air maneuver units can delay in less-threatened areas to gain time for actions against commited enemy units. Air and ground attacks in depth and long-range fires can separate attacking echelons for destruction in detail by defending forces.

In an area defense, committed brigades should begin their local counterattacks as soon as possible. Brigade commanders use their reserves in cooperation with static elements of their defenses—battle positions and strongpoints—to break the enemy's momentum and reduce the numerical advantage. As the attack develops and the enemy's dispositions are revealed, brigade and division commanders should use their reserves and fires to strike at objectives in depth to break up the coordination of the attack.

Mobile defenses anticipated enemy penetration into the defended area and use obstacles and defended positions to shape and control such penetrations. They may also use local counterattacks either to influence the enemy to enter the penetration area or to deceive the enemy as to the nature of the defense. As in area defenses, static elements of a mobile defense must contain the enemy in a designated area. In a mobile defense, the counterattack is decisive; it must be strong, well-timed, and well-supported. Counterattacking forces are preferably committed against the enemy's flanks and rear rather than frontally against deployed attacking units.

During the defense, commanders will have to shift their main effort to contain the enemy's attack until they can take the initiative themselves. This will require the adjustment of sectors, the repeated commitment and reconstitution of reserves, and, usually, modification of the original plan.

To deny the enemy passage through a vital area, a commander may order a force to remain in a strong position on key terrain. A commander might also leave a unit in position behind the enemy or give it a mission that entails a high risk of being entrapped. It is also possible for defending units to be unintentionally cut off from friendly forces. Whenever an unintentional encirclement occurs, the encircled commander must understand the mission and the higher commander's intent and concept of operation clearly so that the encircled commander can continue to contribute.

An encircled force must act rapidly to preserve itself. The senior commander must assume control of all encircled elements and assess the all-around defensive posture of the force. The senior commander must determine or judge whether the next higher commander wants the force to break out or to defend the position. The senior commander must reorganize and consolidate expeditiously. If the force is free to break out, it should do so before the enemy has time to block escape routes. If it cannot break out, the senior commander must continue to defend while planning for and assisting in linkup with a relieving force.

Nuclear and chemical weapons present the defender with great opportunities and risks. When authorized for use by the defender, they can be employed to isolate or defeat the attack by destroying or disrupting critical enemy units. Used against the defender, such weapons can create gaps, destroy or disable units, and obstruct movement. The defensive plan must anticipate the effects of such weapons by providing dispersed positions for forces in depth, last minute concentration of units on positions, multiple routes of approach and withdrawal, and appropriate protective measures in all occupied areas.

Such measures also mitigate the effects of conventional fires. Commanders should consider using them even when nuclear and chemical operations are unlikely whenever the attacker has a substantial advantage in artillery and air support.

Retrograde Operations

A retrograde operation is a movement to the rear or away from the enemy. Such an operation may be forced or voluntary, but in either case, the higher commander must approve it. Retrograde operations gain time, preserve forces, avoid combat under undesirable conditions, or draw the enemy into an unfavorable position. Commanders use them to harass, to exhaust, to resist, to delay, and to damage an enemy. Retrograde operations are also used in operational maneuver to reposition forces, to shorten lines of communications, or to permit the withdrawal of another force for use elsewhere.

The three types of retrograde operations are delays, withdrawals, and retirements; all are difficult, and delays and withdrawals are inherently risky. To succeed, they must be well organized and well executed. A disorganized retrograde operation in the presence of a stronger enemy invites disaster.

In delays, units give ground to gain time. Delaying units inflict the greatest possible damage on the enemy while preserving their freedom of action. In withdrawals, all or part of a committed force disengages from the enemy voluntarily to preserve the force or free it for a new mission. In retirements, a force not in active combat with the enemy conducts a movement to the rear, normally as a tactical road march.

In a corps or a division operation, the commander usually combines these forms of retrograde operations in simultaneous or sequential actions. For instance, a withdrawal usually precedes a retirement and the retirement of one unit may be covered by the delaying action of another.

The underlying reasons for all retrograde operations are to improve an operational or tactical situation or prevent a worse one from occurring. To accomplish either purpose, retrograde operations must be accompanied by efforts to reduce the enemy's strength, to bring up additional forces, to concentrate forces elsewhere for an attack, to prepare stronger defenses to the rear, or to maneuver enemy forces into areas where they can be counterattacked.

As in other operations, depth is important in retrograde operations. Commanders conducting such operations must concern themselves with impeding the enemy's movement in depth and with the security of their own rear areas. Therefore, intelligence on enemy movements in the area of interest will be vital in any form of a retrograde operation. Skillful air support and long-range fires can add appreciably to the effectiveness of delay and may be critical to the security of a withdrawal. Firm control of friendly movement to the rear is essential to retaining control of any retrograde operation.

Delays. Delays are conducted when forces are insufficient to attack or to defend or when the defensive plan calls for drawing the attacker into an area for counterattack. Delays gain time for friendly forces to:

- Reestablish the defense.
- Cover a defending or withdrawing unit.
- Protect a friendly unit's flank.
- Participate in an economy of force effort.

Considerations. Commanders preparing to conduct delays should consider the factors of mission, enemy, terrain and weather, troops, time (METT-T) as they make their initial estimate of the situation. The *mission* of the force states the higher commander's requirements for the delay. It develops the concept of the operation for the force as a whole, and specifies the duration and terrain limitations that apply to the operation. If commanders intend to employ the delaying force in their subsequent operations, they must specify the degree of damage or risk to the force they are willing to accept. In this case, commanders must make clear which parameter will govern—duration and terrain, or friendly loss.

The strength, location, tactics, mobility, and capabilities of the *enemy* also have a large bearing on how commanders organize their delay. Among the most important considerations for the delaying commander are patterns of enemy operations and the enemy's vulnerability to counterattack, interdiction, electronic warfare, air attack, and canalization by obstacles. Commanders must also examine the enemy's capability to conduct air attacks on the delaying force, to insert forces behind friendly units, and to employ nuclear and chemical weapons.

The *terrain* over which delays must be conducted limits the commanders' options. Open, unobstructed terrain makes delays more difficult to achieve. Such terrain favors the use of armored, mechanized, and aviation units by the delaying force and will require great engineer effort. Close or broken terrain will generally slow the enemy's movement but also makes maintaining contact with the enemy more difficult. In wooded, swampy, or rugged terrain, infantry forces are better suited for the delay and obstacles are easier to construct. The weather's chief effects on the delay are to promote or retard cross-country movement, the use of aviation and air support, and the construction of obstacles. Commanders of brigades and smaller units must pay particular attention to the effects of reduced visibility. Limited visibility requires greater numbers of troop units to cover a given sector and affects the way they maneuver and fight. Early detection of the enemy is more difficult and long-range fires are less effective; decisive engagement is therefore harder to avoid.

The *troops available* to the delaying commander determine the actions to a large extent. As a general rule, a delaying force should be as mobile or more mobile than its enemy. Because the delaying commander usually attempts to avoid decisive combat, the delaying forces should also be capable of delivering accurate, long-range fires, and of constructing significant obstacles. Armored, mechanized, and aviation units are generally best suited to delay. Cavalry units are specially organized and trained to conduct security missions and should be used to delay whenever they are available. Infantry units can be employed to delay in close terrain or to occupy positions as part of the delay. When infantry units can be moved by air to positions in depth, they provide great flexibility to a delaying unit although their limited mobility makes them hard to disengage. Delaying forces rely heavily on artillery and engineer support and require substantial numbers of these units if they are to delay for any length of time. Military intelligence units are valuable to a delaying commander by assisting in maintaining contact with the enemy and in slowing the enemy's movement by interrupting communications. Air defense around such critical points as river crossings and passage points is also important in delays. When nuclear or chemical weapons are authorized for tactical employment, commanders can use them to delay the enemy by destroying critical enemy units, creating obstacles, and slowing the tempo of the attack by requiring masking, decontamination, and dispersed movement.

Time to prepare and the period of the delay are the final preliminary considerations for the commander. The commander must use available time effectively to prepare for the operation, as well as provide subordinates with the most time possible to plan and prepare for their own operation. The length of time required to delay the enemy will determine the tactics to use and the risks the commander will have to accept.

Conducting delays. In the delay, commanders usually deploy most of their forces forward. Because of the width of most delay sectors, combat support units and combat service support (CSS) units will be widely dispersed and must often be attached to the maneuver units they support. Artillery fires should be provided to all committed battalions or squadrons and control of such fires must generally be decentralized. Commanders retain reserves when possible and employ them to assist in disengaging committed units and to slow the enemy by striking the exposed forces. Intelligence officers actively pursue collection operations to provide information on the enemy's movements in depth, to assist in maintaining contact, and to observe gaps in friendly dispositions.

Delays will occasionally involve entire corps or divisions. Corps may conduct them as part of an operational withdrawal. Divisions may perform them as part of a corps defense or in achieving their missions as advance, flank, or rear guard forces for a corps. Such delays are usually organized with subordinate maneuver elements fighting abreast of each other and air and ground reserves held in depth.

Brigades, regiments, battalions, and squadrons are more likely to conduct delays and can perform them in several ways. They may fight from a single set of positions if the delay is a short one, or they may delay using alternate or successive positions. Usually brigade and battalion commanders organize their delays in parallel sectors of considerable depth using a combination of techniques. Attack, defense, and delay from alternate or successive positions may all be combined in such operations. Commanders may elect, for example, to delay initially from alternate positions along the most dangerous approach. Or commanders may elect to delay from successive positions in less threatened areas and to establish a defensive position in depth to slow the enemy in a particularly critical area. During the delay, commanders may shift from one technique to another as the operation develops.

Commanders conducting a delay should take the initiative whenever possible. Striking back at the enemy throws the enemy off stride, disorganizes enemy forces, and prolongs the delay. Contesting the initiative also helps the delaying force avoid a pattern of passivity that favors the attacker. Ambushes, counterattacks, spoiling attacks, close air support (CAS), and battlefield air interdiction (BAI) are all means of striking the attacker.

Usually delaying commanders avoid decisive engagement. They plan and prepare positions in depth to block all avenues of approach through their sectors. Obstacles and indirect fires are of great importance in organizing delay positions because they offset the usually pronounced numerical advantage of the attacking force.

Commanders at all levels should integrate natural obstacles into their delay plans and should enhance such obstacles with scatterable mines, chemical obstacles, or manually installed obstacles and minefields. Most engineer effort in a delay centers on countermobility and continues throughout the operation. As the enemy's attack develops, the delaying commander should shift the engineer effort to the areas of greatest threat.

Engineer units can also improve the mobility of the delaying force and strengthen some of its most critical forces by constructng protected positions. Commanders establish priorities for their supporting engineers based on their concept for each specific operation.

Because of the width of most delay sectors, indirect and air-delivered fires are the commander's fastest means of massing combat power during a delay. All committed maneuver forces must have access to fast effective fire support to assist them in slowing the enemy's movement and in disengaging. When fighting a powerful, mobile enemy, each committed maneuver battalion should be directly supported by an artillery battalion. The force commander for the delay should also retain some ability to mass fires across battalion or brigade boundaries.

As in other defensive operations, indirect fires should protect defensive positions, cover obstacles, and provide smoke and illumination for maneuver forces. Delaying commanders should also plan to use scatterable mines and, when authorized, chemical and nuclear weapons to support their maneuver plans.

Aviation units are particularly valuable because of their great speed and mobility. Air cavalry units can screen, delay, and reconnoiter as part of the delay. Attack helicopter units are usually held in reserve initially. They can assist in the delaying actions of ground maneuver units or help ground units to disengage by attacking enemy vehicles and attack helicopters. They can also attack independently to damage and delay the enemy. Commanders can employ combat support aviation units to position infantry units, to move engineers to critical points, and to move supplies during the delay.

The delay is concluded when enemy forces have halted their attack or when the delaying force has completed its mission and has passed through another force. If the enemy force has halted because of attrition or lack of sustainment, the commander of the delaying force can either maintain contact or withdraw for another mission. In the latter case, the delaying commander must assist in the passage of lines and provide information about the enemy and the terrrain to the relieving force.

More commonly, a force ends its delay by withdrawing through a friendly defending force. When it does so, it must conduct a rearward passage of lines and handover the battle to the defending unit. Smooth transfer of control requires the commanders involved to coordinate passage points, to establish recognition signals, to work out supporting fires, and to agree on routes through the defended position. When possible, handoff should occur just forward of the new defense to conceal the transition and the location and organization of the defense.

In many instances, it will be preferable to pass delaying units to the rear in sectors not under direct attack. Commanders may do so by maneuvering delay forces away from the enemy's front just before reaching the main defense.

Withdrawals. Commanders conduct withdrawals to remove subordinate units from combat, adjust defensive positions, or relocate their entire force. Whether withdrawing locally or as part of a general withdrawal, committed forces voluntarily disengage from the enemy and move to the rear. Withdrawals may be conducted under or free of enemy pressure and with or without the assistance of friendly units. Whatever the case, withdrawals will always begin under the threat of enemy interference.

Battalions and brigades can adjust their positions over short distances by delaying or by withdrawing their main forces under the protection of detachments left in contact. Larger forces and deeper withdrawals require commanders to organize a covering force and a main body. Whatever their size, withdrawing forces must prepare as thoroughly as time allows and be ready to defend themselves if the enemy interferes with the operation.

Considerations of withdrawals. Withdrawals are inherently dangerous, since they involve moving units to the rear away from what is usually a stronger enemy force. An active enemy can prevent or delay a unit's withdrawal unless the withdrawing force is well-trained and well-organized for the operation. In all withdrawals, the commander should attempt to conceal from the enemy the intention to withdraw.

In a general withdrawal, the commander of a brigade or larger force organizes a covering force and a main body. The covering force prevents effective pursuit or interference with the main body's withdrawal. The main body forms behind the covering force and moves to the rear protected by advance, flank, and rear guards and prepares to defend itself.

The withdrawal plan should include a deception plan, provisions for the covering force and main body to defend or delay if necessary, and measures to assure speed in execution. Such measures include multiple routes, additional transportation, route improvement, and coordinated traffic control and movement planning.

Air and ground reserves should be made available to support a general withdrawal. Indirect fires and deceptive measures should be planned to mask movement of friendly forces, and obstacles and fires should be used to retard pursuit by the enemy. Since withdrawing forces are extremely vulnerable to detection and interdiction by enemy air forces, strong air defenses and air superiority in the area of the operation are highly desirable. Demonstrations may be conducted in other areas to distract the enemy in support of a general withdrawal.

Whenever it is possible, withdrawals should take place at night or in adverse weather to delay detection by the enemy. Smoke can also obscure friendly movement. Commanders anticipating withdrawals should avoid signaling their intentions by the obvious relocation of combat support and CSS facilities or by premature installation of obstacles or destruction of routes. Jamming of enemy command nets can slow the enemy's reaction to a withdrawal once it is under way.

Plans and orders for a withdrawal are based on a concept of operations that fully describes the commander's intent and provides for maneuver, fire support, obstacles, deception, and security. The plan also prescribes organization for combat, primary and alternate routes of withdrawal, and the schedule for movement of withdrawing units. Finally, the plan assigns the new positions to be occupied following the withdrawal and alerts each unit to its new mission.

Conducting withdrawals. Commanders should anticipate enemy interference by fires, direct pressure, and attempts to envelop. When withdrawing under enemy pressure, the covering force will fight a delay to permit the withdrawal of the main body. Main body units will reinforce the covering force as necessary and will themselves delay or defend if the covering force fails to slow the enemy.

All available fires, electronic warfare (EW) assets, and obstacles support the withdrawal of closely engaged friendly forces. Commanders must tightly control rearward movement and maintain synchronization throughout the force. Deep operations may be useful in relieving pressure on units in contact with the enemy.

If the withdrawal begins without enemy pressure, the covering force may remain in position to prolong the deception. If the enemy does not attack during the withdrawal, covering forces and rear guards remain between the enemy and the main body, and the main body moves to the rear as rapidly as posssible. When the main body has withdrawn a safe distance, the covering force may be withdrawn to intermediate or final positions.

Every element of the withdrawing force must be capable of defending itself at least temporarily against ground attack, and any contact with the enemy in the rear area must be reported as a matter of great urgency. Should the enemy block movement in the rear, commanders must be able either to shift to alternate routes that bypass the interdicted area or to reduce the roadblock.

When simultaneous withdrawal of all forces is not practical, commanders determine an order of withdrawal. If they withdraw first the most heavily engaged units from the area of greatest actual or potential pressure, the enemy may encircle or destroy remaining elements of the command. If commanders withdraw the least heavily engaged units first, they may find themselves unable to withdraw those most heavily engaged or most dangerously threatened. Commanders must decide which action best preserves the force while performing the mission.

When corps or divisions withdraw, their reserves remain well forward to assist other units by fire or by conducting ground attacks. While units are withdrawing under pressure, reserves can launch spoiling attacks to disorganize and delay the enemy. Reserves may also extricate encircled or heavily engaged forces. Aviation units help forward units maintain contact, secure flanks, delay enemy armor, react to enemy air assaults, assist in command and control, and transport troops and material.

Withdrawing units may be assisted by other units that have established defenses behind the withdrawing force. Such defending forces may be able to provide fire support, EW support, air defense, and logistical assistance to a withdrawing unit. Most important, they assume responsibility for the sector once the withdrawing force has passed through them.

When such a force is in position, the withdrawing unit coordinates for support as early as possible. The withdrawal is conducted in the usual way until the withdrawing force passes behind the assisting force. Once in the defended area, the withdrawing force either joins the defense or continues to the rear in a retirement.

Retirements. Retirements are rearward movements away from the enemy by a force not in contact. They are usually covered by the security forces of another unit to their rear and conducted as a tactical road movement. Retiring units must be organized to fight but they do so only in self-defense. A retiring unit may be attacked by guerrillas, air strikes, air assaults, or long-range fires. Its commander must have plans for dealing with such contingencies.

Security and speed are the most important considerations in conducting a retirement. Retiring units move at night when possible. They should move in daylight only if their mission requires it or if the enemy is incapable of interfering with them. When the enemy controls the air or can otherwise interdict friendly movement in depth, a retiring force may have to move by infiltration during daylight. Commanders conducting retirements emphasize the maximum use of operational security measures during their movement.

Summary

The purpose of the defense is to stop the enemy and prepare to go on the offense. The specific goals of defensive operations are to retain ground, gain time, deny enemy access to an area, and damage or defeat attacking forces. The characteristics of defensive operations include preparation of the defense, disruption of the enemy attack, concentration of forces at key terrain, and flexibility on the battlefield. Common defensive patterns include the mobile defense, where the enemy is destroyed by a mobile reserve force, and the area defense, where the enemy is destroyed by fire while key terrain is retained. The essential elements of defensive framework include establishing the security force forward, conducting primary defensive operations in the main battle area, maintaining a reserve to support continued operations, supporting deep operations, and rear operations to sustain the operation.

Retrograde operations are the most difficult and dangerous combat operations to execute. The delay inflicts maximum damage on the enemy while trading ground for gained time. A withdrawal is when all or part of the committed force disengages voluntarily to preserve the force or conduct a new mission. A retirement is when a force not in contact conducts movement to the rear. Defensive and retrograde operations are the "meat and potatoes" of ground combat operations and must be executed well to allow a force to take the offense.

Sustaining the Battle

Today the US Army's ability to sustain its operations is more important as an element of combat power than ever before. To fight effectively in any type of operation with any combination of light and heavy units, Army forces must field an adequate, well-operated combat service support (CSS) system. Deployed Army forces will also be expected to furnish supporting Air Force units with a variety of logistical services.

Sustainment is equally vital to success at both the operational and tactical levels of war. Campaigns will often be limited in their design and execution by the support structure and resources of a theater of war. Almost as commonly, the center of gravity of one or both combatants will be found in their support structures, and in those cases major operations or even entire campaigns may be mounted to destroy or defend those structures. Operational maneuver and the exploitation of tactical success will often depend critically on the adequacy of a force's sustainment.

At the tactical level, a unit's flexibility, its ability to maneuver or to mass fires extensively, and its capacity for prolonged operations and operations in depth will all rely heavily on its sustainment system. The differences in firepower, agility, and endurance that can decide battles all derive as much from the combat service support system as they do from any of the other systems that support fighting forces.

Sustainment Challenge

Sustaining large forces in combat has become an extraordinary challenge. Even in World War II, the challenge was considerable. During its August 1944 pursuit across France, for example, the US Third Army consumed 350 thousand gallons of gasoline every day. Today, it is estimated that *one* armored division equipped with MI tanks will consume over 600 thousand gallons of fuel per day, more than twice the consumption of Patton's entire army.

The sole measurement of successful sustainment has always been the generation of combat power at the decisive time and place. Operations will therefore be characterized by high consumption of military materiel and by a great diversity of equipment types. Other characteristics are the expansion of the battle area resulting from both sides employing sophisticated weapons, communications, and sensors; and the extended lines of support within and outside the theater of operations. Sustainment on this enlarged, material-intensive, electronically sensitive, and lethal battlefield presents an unprecedented challenge.

Key Sustainment Functions

Sustaining operational and tactical efforts in this environment comprises six key sustainment functions. These functions are: manning, arming, fueling, fixing, transporting the supported force, and protecting the sustainment system itself from attack.

Manning. The first challenge of sustainment is to assure the uninterrupted flow of fighting personnel to the battle area and to provide necessary personnel services during operations. To support operations, units must be assembled, transported, and distributed as the commander requires, and their fighting strength conserved. Health services, administrative support, chaplain activities, morale support, replacement operations, and, above all, leadership are part of maintaining strength and spirit in a fighting force.

Arming. The weapons and implements of war have never been more diverse and complex. Today's weapons consume large amounts of ammunition and depend on high-quality electronic and optical devices for accuracy and coordination. In most recent wars, replenishing arms, ammunition, and equipment required extraordinary efforts. Today, given the large variety of ammunition and weapons in use and the expected fluidity of battle, arming the soldier has become an even greater challenge. In periods of intense combat, arming the fighting units will be the largest, most time-sensitive task of the sustainment system.

Fueling. Though the high-performance air and ground vehicles of the Army furnish great potential mobility for both heavy and light forces, they also consume large quantities of fuel. Wheeled vehicles use less fuel than tracked vehicles and heavy equipment but will still make great cumulative demands on the sustainment system. To assure adequate support of operations, commanders will have to set clear priorities for fueling, plan consumption accurately, and economize whenever possible. Logisticians will have to operate a high-volume fuel system merely to support routine consumption rates. In peak consumption periods, victory may depend on the ability of the sustainment system to increase the flow of fuel.

Fixing. In all operations, time will be critical and replacement equipment will be scarce. The force that is better able than its opponent to recover damaged equipment and return it to service rapidly will have a clear advantage in generating and concentrating combat power. For the force operating at a numerical disadvantage, the capability to maintain, recover, and repair equipment will be even more important. Good maintenance practices in all units, forward positioning of maintenance units, stocks of repair parts and replacement equipment, and well-understood priorities for recovery and repair may spell the difference between tactical success or failure. Similarly, theater facilities for repair and replacement of materiel and theater policies on repair and evacuation of equipment will strongly influence the outcome of campaigns.

Transporting. Personnel, equipment and supplies must be moved rapidly and in quantity to support operations. Operational and tactical actions require timely concentration of units and materiel. These actions will often demand short notice movement of sizable forces and major shifts in direction of movement. At the tactical level, units, supplies, and important facilities must be moved as battles progress to assure responsive support of committed units as large as corps. At the operational level, the number, location, and quality of lines of communication may well determine the very structure and tempo of a campaign. Planning, controlling, and executing transportation operations in a theater of war or in the course of a battle require detailed preparation and extensive training of CSS staffs and units. The complicating effects of terrain, weather, and enemy interdiction will demand great flexibility of transportation planners and operators.

Protecting. Protecting the sustainment effort is an integral part of all combat operations. Because sustainment is necessary to every operation, the support system will be a prime target of enemy operations both in the forward areas and in depth. Enemy air, missile, ground, and unconventional warfare forces will attack the support system as part of a coordinated battle or campaign plan. Passive and active measures must therefore be combined to protect the sustainment effort. To the greatest degree possible, combat service support forces must seek protection in dispersion, concealment, and self-defense. Nevertheless, commanders may frequently have to take active steps to defend their sustainment system and prevent disruption of support functions, especially at decisive stages of combat.

Sustainment Imperatives

To meet these challenges, sustainment of AirLand Battle operations confronts five fundamental imperatives. Anticipation, integration, continuity, responsiveness, and improvisation are imperatives for sustainment of these operations.

Anticipation. The agility of a force, its ability to seize and retain the initiative, and its ability to synchronize its activities in depth all depend to a great extent on how well its support operations anticipate requirements. For sustainment planners, anticipation means maintaining or accumulating the assets necessary to support the commander's operation at decisive times and places. Anticipation also demands that sustainment operations be flexible enough to accommodate any likely operational or tactical contingency. At the tactical level, this may mean rapid readjustment of basic loads, prescribed loads, and expenditure rates to assure that shortages of fuel, ammunition, and parts do not limit the force's conduct of battle. At the operational level, anticipation requires that sustainment planners visualize the entire course of a major operation or campaign while planning specifically for the phase that is under way. Planners must assure that base facilities, priorities of support, lines of communication, and troop movements in the theater can effectively support the main line of operations, yet adjust rapidly to any branches or variations that are likely to be developed. Planners must also anticipate shifts in demand based on the changing nature of operations; for example, a shift from high ammunition to high petroleum consumption as exploitation begins.

Integration. Neither tactical nor operational plans can succeed without fully integrated combat service support. The commander must assure that the overall operation is supportable at every stage of its execution. Support unit commanders must plan their own activities to give the operational or tactical commander the greatest possible freedom of action throughout the campaign or battle. They must be bold and innovative in their support operations to contribute to surprise by allowing the supported force to do more than the enemy thinks possible.

Continuity. Sustainment cannot be interrupted for long without directly diminishing the combat power of a force. During operations, committed forces—combat, combat support, and combat service support—must receive continuous supply and service to sustain their fighting strength. If commanders expect units to be isolated by enemy action as a result of their own tactical plan, they must arrange for those units to be sustained throughout the operation either by accompanying CSS forces or through specially planned replenishment operations.

Although operations and sustainment both vary in intensity, operations may enter inactive periods; sustainment does not. In fact, periods of operational inactivity usually coincide with efforts by both combatants to rebuild their units and bases of support. Sustainment planners and commanders must take advantage of every opportunity to increase sustaining capabilities. When the pace of combat activity diminishes, they must redirect their efforts to replenish the sustainment base while continuing support to combat units. Since such efforts require CSS units to operate constantly, commanders must make special provisions for resting, retraining, and reequipping them.

Finally, continuity requires that the sustainment effort never become hostage to a single line or mode of support. Temporary or permanent losses of key ports, airheads, and lines of communication (LOC) must be expected and hedged through forward stockage, alternate facilities, or a combination of both. Since the price of such hedging is a reduction in current consumption, commanders must constantly balance that cost against the risk of interruption.

Responsiveness. In crises or when fleeting opportunities arise, the sustainment system must react rapidly. Such quick reaction to increased demand is only possible if CSS units are trained to respond on short notice and to "surge" their support for brief periods. Such efforts may temporarily upset the support system but are often necessary to winning. At the operational level of war, the sustainment system must be able to meet similar extraordinary demands on an even greater scale. Efforts to reestablish a ruptured defense or to exploit a tactical success may call for relocation of support bases. These efforts also may require major redirection of supply flows, reallocation of transportation means, or short notice transfer of units from one part of the theater to another. The mental and physical agility to cope with such requirements must be built into the sustainment system ahead of time by effective organization, careful planning, and solid training.

Improvisation. No matter how carefully commanders and planners try to anticipate events, unforeseen contingencies arise in every conflict. Enemy action, interruption of sealift or airlift, and natural disasters can all upset plans and require improvisation. In such situations, normal operating procedures must be suspended, unusual sources of supplies and transportation exploited, and exceptional risks accepted. Tactical vehicles may have to be pressed into service as supply transporters, equipment in uncommitted units cannibalized for parts, or emergency supply points established. Less dramatic emergencies, such as unexpected maintenance failures in a particular type of equipment, loss of support equipment, or unanticipated peaks in workload also require improvised solutions.

Organization for Sustainment

Because future conflicts will most likely be some distance from the United States, organization and planning for sustainment of operations will be strongly influenced by the nature of the theater and the circumstances in which US forces are committed. Among the most important considerations influencing theater sustainment organization and planning are the following:

1. *Forces available*. The forces available for sustainment operations will critically influence the time needed to create a sustainment base in the theater and the preparation of that base for operations. A large proportion of the Army's CSS units are in the Reserve components. Therefore, the preparedness of those units and the time necessary to mobilize and deploy them will be a significant factor in planning the establishment of an overseas theater of war. If Reserve component forces are not readily available, the scope and nature of theater sustainment will be seriously affected.

2. *Theater infrastructure*. The difficulty of establishing the theater sustainment base will depend greatly upon the extent and nature of the civil and military infrastructure existing in the theater before hostilities begin. When ports, airfields, depots, repair facilities, supplies, and transportation facilities are well developed and operated by friendly governments, US forces can begin operations quickly without having to establish a wholly new base of support. When facilities and supplies are not present or available, Army units may have to operate for a considerable period from austere, in-theater bases. In such an event, CSS and construction units will be needed early and in substantial numbers, and operations may initially be restricted accordingly.

In some cases, the required support infrastructure, though not available in the theater of operations, may be present elsewhere in the theater of war. In this case, combat operations can be supported from an intermediate forward staging and sustainment base until a communications zone (COMMZ) can be organized in the theater of operations itself.

3. *Host nation support (HNS)*. In a theater of operations in which US forces are deployed in peacetime, such as Korea or Europe, preestablished arrangements for HNS can significantly reduce the requirements for early augmentation of US sustainment assets. Such HNS

arrangements can include operation, maintenance, and security of ports and airheads; management of routes, railways, petroleum pipelines, inland waterways, and bulk storage facilities; and operation of existing communications networks. Host nation support can also supply transportation, civilian labor, and local security and police forces in some cases.

4. *Establishment of the sustainment base.* Even in a developed theater, operational and logistical planners will have to make early but far-reaching decisions about their principal and supplementary bases of support.

5. *Major sustainment systems.* Wherever it is established, the theater sustainment base must be capable of supporting the five functional systems of the sustainment effort: transportation, maintenance, supply, personnel, and health services.

Tactical Sustainment

Tactical sustainment includes all the CSS activities necessary to support battles and engagements and the tactical activities that precede and follow them. Among the critical factors to be considered in planning support for tactical operations are:

- Number and types of support units and quantities of resources available.
- The commander's priorities for support.
- Consumption factors for the type of operation being planned.
- Critical weapon systems whose continuous operability is crucial to the success of the battle.
- The threat to CSS operations in the rear and forward areas.
- Major tactical contingenices that may have to be supported.
- The locations of supporting and supported facilities.
- The effects of terrain and weather on support activities.
- Future operations.

In applying these factors, commanders and their planners should be guided by the following broad principles:

- Support must be continuous and adequate.
- Combat service support functions should be performed as far forward as possible.
- Roads, airlift, and other means of transportation must be fully exploited and controlled to overcome interdiction and congestion.
- Committed units must be supported by "push" packages rather than by requisition.
- Combat service support units and facilities must be positioned to support the operation, afford priority of support to the main effort, and must survive.
- Protection of CSS units should be planned in detail with self-protection and passive protective measures receiving special emphasis.

Sustainment Controls

A variety of management controls are available to assist commanders in applying and adjusting sustainment priorities. These include methods of supply distribution, basic loads, expenditure controls, and operational measures of support.

Supply Distribution. Usually, CSS elements provide support on an area basis. When providing this support, CSS organizations use a varying combination of unit distribution and supply point distribution procedures.

When *unit distribution* is used, the supporting unit *delivers* supplies to the supported unit's area in transportation arranged by the *supporting unit*. Throughput is a form of unit distribution in which shipments bypass intermediate supply organizations or installations.

When *supply point distribution* is used, the supporting unit *issues* supplies from a supply point to the supported unit. The supported unit uses *its own transportation* to move the supplies to its area.

When determining the type of distribution to be used to support combat forces, the CSS planner should consider the:

1. availability of personnel and equipment to deliver and pickup supplies,
2. missions of the supported forces,
3. adequacy of road networks in the area of operations,
4. priorities for use of the roads,
5. anticipated distances between supporting and supported forces,
6. locations of the supported forces, and the
7. threat to road and rail networks.

Basic Loads. A basic load is that amount of equipment required by a unit to sustain itself until resupply can be effected. This basic load is usually established by the theater commander. The basic load is not a fixed quantity; it may be altered as the situations dictate. Field Manual 101-10-1, *Staff Officers' Field Manual: Organizational, Technical, and Logistical Data*, has model basic load data.

The term *basic loads* applies to all classes of supply. One method of easing the resupply requirements of supported units is tailoring of the basic loads.

Expenditure Controls. Two other sustainment controls apply uniquely to ammunition resupply: required supply rate (RSR) and controlled supply rate (CSR). The RSR is the estimated amount of ammunition needed to sustain a combat force without restriction for a particular type of operation for a specific length of time. It is expressed in rounds of ammunition per weapon per day. The tactical commander uses the RSR to forecast the ammunition requirements. The RSR is normally computed by the operations officer (S3/G3) based on the most current usage data and the projected tactical situation. If current data are not available, consumption estimates from FM 101-10-1 should be used as a guide.

The CSR is the rate of ammunition expenditure that can be sustained with available supplies. Like the RSR, the CSR is also expressed in rounds per weapon per day. The theater commander announces a CSR for each item of ammunition. The CSRs are disseminated through logistics officer (G4) channels. They are normally published in operation orders or in their fire support annexes. They represent the higher headquarter's statement of what ammunition will be made available to support operations.

Operational Measures of Support. Commanders must be concerned not only with support of current operations, but also with the sustainability of future operations. A comprehensive and meaningful picture of the sustainment condition of the force must constantly be available to the operational planners and to the commanders during planning.

To provide that picture, CSS personnel must express the condition of personnel, materiel, and equipment in terms that have operational significance. For example:

- How far the commander can expect to be able to move the force or how long the commander can expect a particular type of equipment to operate in projected tactical conditions.
- How much barrier material is available, expressed in terms of linear or area measurements.
- How much roadway can be constructed with available resources.
- How many company-size units can be issued new protective clothing.
- How many days of rations, fuel, parts, and ammunition are in the system, by type and by unit.

The current and projected maintenance posture must also be available in operational terms. The CSS system must keep the operational planners constantly appraised of the status of key supply items in operational terms. Additionally, operational planners must know the current storage sites of each supply class to assist in planning. Any class or item of supply whose status will adversely impact on the mission must be highlighted to the commander and to operational or tactical planners, together with recommended options to compensate.

Effective support of the soldier also affects combat power. The CSS planners must monitor such aspects of field service as:

- The health, morale, and welfare of soldiers.
- The availability of such field services as showers, laundry, and graves registration units.
- The impact of the field service capabilities on the fighting capacity of units.

The final expression of operational sustainability by the CSS planner or operator must be a judgment regarding the extent to which the mission can be supported.

Summary

Sustainment is a central, potentially decisive aspect of operations, not an adjunct to them. It is as important to success as any other part of the commander's operational plan. To meet the sustainment challenge, commanders must grasp both the operational and logistical possibilities and limitations of their situations. The most successful commanders have been those who pressed their operations to the very limit of their sustaining power—but not one step further.

CHAPTER 11

Joint, Combined, and Contingency Operations

AirLand Battle doctrine provides guidance for operational and tactical level employment of US Army units worldwide. National policies and strategies; alliance and bilateral international agreements; US joint military policies and doctrine; and specific theater military policies, strategies, and doctrine provide the framework for application of AirLand Battle doctrine. These factors determine our policy in NATO Europe, Northeast Asia, Southwest Asia, and other theaters to be established in case of war. AirLand Battle doctrine is predicated on the assumption of routine cooperation of Army units with other services in joint operations. In most cases, Army forces will cooperate with the military forces and civilian agencies of other nations as well. This chapter summarizes standing arrangements for joint operations and presents general considerations for combined operations.

National strategy and theater strategy will dictate the ends and means of major operations and the purposes and conditions of tactical battles and engagements. Cooperation with the US Air Force will be vital always, as will cooperation with US Navy and Marine forces in many cases. It would also be difficult to conceive of future US Army deployments in mid- to high-intensity theaters without some level of allied cooperation. In such cases as Europe and Korea, with allied command structures in place, close cooperation with allied forces will be routine.

Joint Operations

Since US military operations usually involve more than one service, joint operations will be the rule rather than the exception. They will operate under procedures and principles developed, practiced, and standardized in peacetime. The types of joint forces are the unified and specified commands and the joint task forces (JTFs).

Organization and Command and Control. Command and control of joint forces will conform to the provisions of the Joint Chiefs of Staff (JCS) Publication 2, *Unified Action Armed Forces (UNAAF)*. Each service's doctrine and applicable joint doctrine will guide employment. Each military service is responsible for providing its contingent (composed of various types of units) to unified and specified commands. These contingents are called service components but may have other titles such as theater army, naval fleet, fleet marine force, or theater air force. Joint task forces normally draw units from the components. For command and control, usually forces are *assigned* to unified and specified commands but are *attached* to a JTF.

Joint forces operate within two distinct chains of command—one for operations, another for administrative and logistical matters. For operations, orders to commanders of unified and specified commands are issued by the president or the secretary of defense through the JCS. The JCS prepare plans and provide strategic direction for the armed forces, including operations by commanders of unified and specified commands. These commanders are, however, responsible to the president and secretary of defense for accomplishing their assigned tasks.

The administrative and logistical chain of command encompasses those functions of the military services not included in strategic direction. The military departments are responsible for administrative and logistical support of their forces wherever employed. Forces assigned to unified and specified commands deal directly with their respective departments and services on matters that are the responsibility of the departments or services.

Joint commanders are granted the authority necessary to perform their missions. *Operational command* and *operational control* are terms used to describe the authority exercised by joint commanders over subordinate components. These terms are synonymous. *Operational command* describes the authority granted commanders of unified and specified commands by the National Security Act of 1947. *Operational control* describes operational command when applied to other than unified and specified commanders. Both operational command and operational control empower joint commanders to:

- Establish the composition of subordinate forces.
- Assign tasks.
- Designate objectives.
- Direct actions necessary to perform the mission.

The critical factors that determine the structure of a joint organization are:

- Responsibilities, missions, and tasks assigned to the commander.
- Nature and scope of the operation.
- Forces available.
- Duration of the operation.

The organization should provide for centralized direction, decentralized execution, and common doctrine based on the characteristics and service identity of forces available to the command.

Unified Commands. A unified command is established by direction of the president to perform a broad, continuing mission. It is composed of forces assigned by two or more services, operating under the operational command of a single unified commander in chief (CINC). The CINC is responsible to the secretary of defense for accomplishing the mission and operates under the strategic direction of the JCS. Usually, the CINC exercises operational command through component commanders and the Special Operations Command. When necessary, the CINC may establish a subordinate unified command or JTF to conduct specific missions. Under emergency conditions, the CINC has the authority to use all facilities and supplies of assigned forces to accomplish the mission.

The CINC of the unified command develops operation plans (OPLANs), operation plans in concept format (CONPLANs), and operation orders (OPORDs). The CINC is responsible for a specific geographical area.

Specified Commands. Like the unified command, a specified command is established by direction of the president to accomplish a broad, continuing mission. Unlike a unified command, however, a specified command is primarily a single service command, though it may have elements of other services assigned. Like a unified command, a specified command receives strategic direction from the JCS.

Joint Task Forces. A JTF may be constituted by the secretary of defense or by the commander of a unified command, specified command, or an existing JTF. It is composed of elements of two or more services operating under a single JTF commander. Normally it performs missions having specific, limited objectives or missions of short duration. It dissolves when it has achieved its purpose. The JTF commander is responsible to the JTF establishing authority. The commander has operational control over the entire force and usually augments the staff with representatives from the other services. The JTF commander exercises logistical coordination or control only as necessary to meet the subordinate commander's logistical needs.

Component Commands. Each component commander is responsible for the proper employment of forces and for accomplishing operational tasks assigned by the joint commander. Each commander is also responsible for:

- Internal administration and discipline.
- Training in the individual's doctrine, techniques, and tactics.
- Designation of specific units to meet joint requirements.
- Logistics functions normal to the component.
- Tactical employment of service component forces.
- Service intelligence matters.

Combined Operations

In addition to operating as part of a joint force, the Army must be prepared for combined operations with land, air, and naval forces of allied governments. Army forces in the North Atlantic Treaty Organization (NATO) area will operate under one of NATO's major commands (Allied Command Europe, Allied Command Atlantic, or Allied Command Channel). Those in the Republic of Korea will fight as part of the United States-Republic of Korea (US-ROK) Combined Forces Command (CFC). In these theaters, doctrine, procedures, and principles have been developed and practiced to minimize the problems of inter-allied coordination.

Elsewhere, agreements on doctrine, principles, and operating techniques are only partially developed or do not exist at all. In such theaters, US and allied forces will have to work out procedures for combined operations under the pressure of imminent conflict or even while operations are under way.

Campaign planning in combined theaters of operation imposes special considerations not present in unilateral theaters. In combined theaters, the allies share a compelling need to maintain the political cohesion of the coalition as a prerequisite for maintaining the military effectiveness and cohesion of the allied military organization. Accommodation of differences in political-military objectives is therefore of the highest importance. Similarly, accommodation of differences in capabilities among the allies' military forces requires careful planning and tailored coordination and liaison between the forces. Logistical support, though normally a national responsibility, must be coordinated in a combined effort to permit proper synchronized employment of the various allies combat formations. Campaign planning in all of its facets is inherently a combined activity in coalition warfare.

AirLand Battle doctrine must be adapted to each conflict. The following section describes the chief considerations for Army units in combined operations. Specific arrangements for existing alliances are contained in standardization agreements and allied tactical publications (ATPs). Upon ratification, the provisions of these standardization agreements are incorporated into appropriate field manuals, technical manuals, and training manuals.

Considerations of Combined Operations. The US Army has fought alongside allied forces in a wide variety of operational situations. In high- and mid-intensity conflicts, allied officers have commanded US formations as large as field armies. Likewise, US commanders have both employed and cooperated with armies, corps, and divisions of other nations. In low-intensity conflicts, cooperation between smaller forces have been just as common. Maneuver, fire support, air operations, combat support, combat service support (CSS), and naval support have all been effectively synchronized between allies in support of combined operations.

AirLand Battle doctrine as a broad approach to war is entirely consistent with the demands of combined operations. Its emphasis on actively seeking the initiative, operational and tactical agility, campaigns and battles in depth, and synchronization of all efforts retain their validity in combined operations. AirLand Battle doctrine accommodates, but is not dependent on, highly sophisticated equipment. It can equally well accommodate the employment of weapons and units different from those in US forces.

Special efforts have always been necessary to coordinate the operations of a multinational force. Such efforts will continue to be required in future combined operations. The chief considerations in planning and conducting such operations are:

- Command and control.
- Intelligence.
- Operational procedures.
- Combat service support.

Interoperability between US Army and allied forces is an essential condition for efficient combat operations in combined or coalition warfare. In established alliances, specialized agencies and procedures exist to facilitate common or compatible development of doctrine, tactics, techniques, procedures, training methods and exercises, professional education, organizational design, and materiel developments. The ultimate objective of these efforts is to ensure the synchronized employment of US Army and allied combat capabilities to achieve the military objectives in a theater of operations.

Command and Control of Combined Operations. Unity of command is essential in all operations. In combined operations, it proceeds from the political and strategic leadership of the alliance. It is exercised in the theater of war by a supreme allied commander or commander in chief appointed by the leaders of the alliance.

National contingents usually retain command of their own forces, relinquishing operational command or operational control of the forces they commit to combined operations. This will be the usual arrangement for Army forces participating in combined operations. Army commanders will fight at the direction of the allied commander, but some administrative functions of command will usually be retained by a US Army officer who may be a theater army commander or the commander of a subordinate force.

Special communication and liaison arrangements are required when command relationships are established between US units and superior, subordinate, or adjacent allied headquarters. This is true at the highest levels where US field armies or corps may operate at the direction of an allied headquarters alongside field armies or corps of other nationalities. It is also true within corps containing divisions of different armies and within the areas of operations of smaller units who must cooperate with local self-defense forces or civil authorities.

Personalities and sensitivities of allied military leaders are unavoidably a consideration in combined operations. In fact, Gen Jacob Devers, commander of the Sixth Army Group in World War II, considered the problem of personal relationships to be the greatest challenge of combined command. As an example, cooperation of US and Vietnamese forces was frequently impeded by misunderstandings rooted in cultural differences.

Commanders and staff officers in combined operations must therefore take personal and national characteristics into account in all their actions. In some cases, such considerations will largely dictate the disposition of forces and the assignment of missions. Tact, appreciation of national differences and capabilities, and an understanding of allied national goals and interests are essential to commanders, staff officers, and troops involved in combined operations.

Multinational staffing can help coordinate operations within large forces. In any case, deliberate and detailed planning is necessary to assure coordination within a combined force. The exchange of liaison parties with reliable communications is usually required when an operation depends on close cooperation between allied units.

Specialist liaison officers—such as aviation staff officers, fire support officers, engineers, or intelligence specialists—may be exchanged when allied or US forces employ units or equipment with which they are unfamiliar. Whenever possible, such liaison officers should be familiar with the staff and operational organizations, doctrine and procedures of the force with which they will work. They should either speak the language of that force or be accompanied by interpreters. Civil affairs officers and staff officers can assist in the control of operations that require the cooperation of host nation civilian authorities.

Intelligence. Allies normally operate separate intelligence systems in support of their own policy and military forces. In war, the products of national collection that affect operations must be shared and early coordination should be made to assure that the intelligence operations of allies are coordinated. Specific provisions for combined intelligence operations and the utilization of national systems must be arranged at the highest levels of the alliance.

For operational and tactical purposes, it is essential that arrangements be made for the rapid dissemination of military intelligence and for the use of available intelligence assets by all partners in the operation. This will usually require the formation of a combined intelligence staff at theater level, the establishment of an intelligence network with dedicated communications and liaison officers to link allied headquarters, and the assignment of tactical intelligence units throughout the force in a way that optimizes their use. Technical intelligence collectors such as drones, direction finders, and radars and EW assets of the national contingents will differ. Their capabilities should be considered by the combined intelligence staff and, if it is advantageous, these collection means should be distributed throughout the force to assure that the command's full potential for intelligence collection is realized.

Coordinating Combined Operations. AirLand Battle doctrine is based on the flexible application of friendly strengths against enemy vulnerabilities and is adaptable to combined operations at the operational and tactical levels in offense or defense. The design of combined operations should make maximum use of the strengths of all participating forces while compensating for their comparative vulnerabilities. In many operational and tactical activities, standing operating procedures will have to be developed to assure effective cooperation between the forces of different nations.

At the operational level, combined forces pursue campaign objectives designed to achieve theater objectives for the alliance. Plans should reflect the special capabilities of each national contingent in the asignment of missions. The mobility, intelligence collection assets, size and sustainability of formations, air defenses, capabilities for long-range fires, and special operations forces are among the significant factors in combined operations at this level. In addition, there is training for operations in special environments, and preparation for operations in nuclear and chemical environments. The cooperation of US, British, and Canadian forces in France; United Nations forces in Korea; and German and Italian forces in North Africa exemplify the way in which complementary capabilities can be harmonized in large force operations.

Usually the military forces of each nation are employed together and national contingent commanders are charged with responsibility for their own operations and support. Some functions, however, may be assigned to the forces of a smaller group of allies. Rear area security responsibilities, for instance, may be given to home defense or police forces of the host nation. Likewise, air defense, coastal defense, or some special operations may be entrusted to one ally based on that force's special capabilities.

Tactical cooperation requires more precision since it deals with immediate actions in combat. Among the disparities that adjacent and supporting allied commanders must reconcile are dissimilar tactical control measures, differences in tactical methods and operating procedures, varying organizations and capabilities of units, and differences in equipment. Weapons, radios, maps, and intelligence collection systems usually differ among allied armies.

Liaison, equipment exchanges, and combined training can offset some of these problems. More basically, though, the commander of a combined force must plan and conduct his operations in ways that exploit complementary strengths and minimize problems of coordination. Habitual relationships between units should be established and maintained when one nation's forces will be assigned to another's for an extended period. Detailed planning with emphasis on rehearsals and careful wargaming should precede operations in which allied units will cooperate for the first time.

Specifically, tactical plans should address recognition of allied units, soldiers, and vehicles; fire control measures; air support arrangements; communications; liaison; and movement control. The commander's intent and the concept of the operation should also receive special attention because of differences between allies in doctrine and terminology.

Plans for close operations must reflect the capabilities of all available forces. Allied units in adjacent zones or sectors must understand their neighbors' concepts of operations and maintain contact as necessary just as adjacent forces of the same nationality would. Tactical differences deriving from national doctrine—how flank security is handled, how passages of lines are conducted, when and whether small enemy forces will be bypassed or permitted to penetrate a defense, how much ground will be given up—must be clearly understood.

Deep operations plans of a US force containing allied units must also provide for the intelligence and long-range fire support needs of such forces. When allied artillery, air, electronic warfare (EW), or special operating forces (SOF) can contribute to deep operations or improve the overall capability of the force, their capabilities must be understood and their efforts coordinated with the overall tactical plan. US units operating under allied command should use their own capabilities for deep operations to accomplish their missions in consonance with the allied commander's concept of operations.

Rear operations must also be coordinated between allied units. This should be done by assigning responsibility for all areas in the rear. When reserves or supporting forces must pass through or fly over a unit's rear area, careful coordination must be made in advance. Similarly, the movements of enemy forces in the rear area must be reported promptly when such forces pass from one ally's area into another's. Territorial forces or home defense units, police organizations, and civil authorities with rear operations responsibilities in the rear area of a US force must be included in rear operations planning, kept informed, and kept in communications with the headquarters they support.

Combat Service Support. The logistical support of military forces is normally a national responsibility. Nonetheless, allied commanders will have to coordinate the use of facilities such as highways, rail lines, ports, and airfields. They will also have to seek and usually regulate within the force, the support available in the theater of operations or from the host nations. For these reasons, combined commanders should form a combined logistics staff section as early as possible.

Movement control, operation of ports and airfields, theater communications, some supply functions, and airspace command and control are significant matters that may have to be coordinated above the level of national contingents. To assure coordination and to prevent duplication, commanders of combined forces must establish clear responsibilities for such functions. Lower-level commanders and staff officers responsible for operating in the theater will have to resolve the problems of liaison, language, and compatibility of equipment inherent in multinational military operations.

Transportation, construction services, medical support, and some classes of supply will often be available in the theater. Host nation support may be used to supplement or substitute for US services, supplies, and facilities. Water, food, and construction materials may also be available and may have to be obtained by a central allied agency and shared equitably between national contingents. The civil military operations (CMO) officers can identify and coordinate US requirements for local resources, facilities, and support.

In many instances, the US has supplied allied forces with material and has received combat support or combat service support from the military or civilian authorities of other alliance partners in exchange. Such arrangements can lead to significant economies of force and effort. Support agreements between allies should be sought early in a combined operation.

When allies use the same equipment, provisions should be made for resupply, maintenance, or other support operations across national lines, routinely if that is feasible and in case of tactical emergency in any event. Petroleum, oil, and lubricants (POL), medical supplies, barrier materials, mines, and some tools and vehicles can usually be used by all members of an alliance. In the interests of simplicity of operations and economy of effort, these may be obtained and distributed through a single combined supply agency in some cases.

Contingency Operations

The national command authorities (NCA) may direct contingency operations of US forces overseas in support of national policy. Contingency operations are military actions requiring rapid deployment to perform military tasks in support of national policy. Such operations are normally undertaken when vital national interests are at stake and direct or indirect diplomacy and other forms of influence have been exhausted or need to be supplemented by either a show of force or direct military action. Contingency operations involving Army forces may provide a rapid show of force in support of a threatened ally to deter aggression by a hostile neighbor, react to the invasion of a friendly government, protect property of US nationals, rescue hostages or perform other tasks directed as by the NCA. Contingency operations are always joint undertakings conducted within the framework of the Unified Command System. The size of the contingency force, its mission, and its area of operations will vary.

Considerations of Contingency Operations. The Joint Chiefs of Staff (JCS) and unified and specified commands provide for the most effective use of forces committed to a contingency. These military planners seek to:

1. Provide best available intelligence information, including political, social, and economic considerations as well as information on terrain, climate, and friendly/enemy forces.
2. Provide multiple options to the NCA in support of national objectives, and explain the capabilities and limitations of the military forces in each option.
3. Use the most current and authoritative guidance available. They should know before hostilities occur what US political authorities are prepared to do in responding to threats to national interests.
4. Inform civilian authorities of the risks associated with proposed plans.
5. Judge what additional resources would effectively reduce those risks.

The overall national policy aims must always be clear when military contingencies are planned. Rules for limitations on use of force must be observed. At this level, military planners harmonize plans with diplomatic efforts to deter hostile actions, facilitate military actions, and provide a framework of policies to govern military action.

The JCS and unified and specified command planners consider certain factors involving total force readiness, availability, and appropriateness in their plans. The considerations include:

1. *Mission*. The mission analysis determines the tasks. A large force may have to deter or defeat enemy forces that attempt subversion or invasion. A small force may be deployed to perform any of a number of specialized missions.
2. *Adequacy*. A trained force adequate to the task should be available.
3. *Deployability*. The means should be available to deploy the necessary force in the required time.
4. *Supportability*. The means should be available to support and sustain the force long enough to accomplish the mission.
5. *Affordability*. The forces and other resources for one mission must be weighed against vital missions elsewhere.
6. *Availability of forces*. Light forces can be deployed quickly and are easiest to support. When adequate to the threat, they are the preferred Army force. Before an impending crisis develops into open hostilities that may increase risks to US interests, early deployment of light forces may deter an opponent and thus prevent a costly subsequent engagement. Light forces would not be appropriate, however, to face tank-heavy forces or to operate over great distances. Heavier forces take longer to deploy and are more difficult to support, but they may be necessary to defeat the enemy. Planners weigh the considerations in each case to arrive at a proper combination of forces.
7. *Use of indigenous forces*. An indigenous force may be available to accomplish all or a part of the mission and to assist in supporting US units. The capabilities and limitations of indigenous forces enter into contingency planning. Combined with a small US combat force or appropriate US logistic and fire support, an indigenous force may be sufficient. Given these circumstances, US forces can operate under either a US national command or a combined command.

Command and Control of Contingency Operations. The command and control needs in contingency operations might lead to forming a joint task force (JTF) from assets within the unified command responsible for the contingency area. A JTF could also be organized and deployed from forces of a supporting commander in chief (CINC) and transferred to control of the supported CINC just before employment. The gaining unified command could be responsible for employing the JTF or the NCA might retain control of the JTF through the JCS.

Strategic Deployment. United States Army Forces Command (FORSCOM) units may fill Army requirements in a deploying JTF or may augment Army components of unified commands overseas. Army forces normally deploy on receipt of a JCS deployment order, but they may also receive some movement instructions from JCS warning or alert orders. Transportation by sea or air is under supervision of supporting or supported unified commanders.

During deployment planning, the gaining Army component commander ensures the arrival of Army units into the operational area according to the CINC concept of operations. The Army component commander develops an operational scheme for employment of Army forces and determines the forces required to accomplish the missions assigned to the CINC. After coordinating with the other services, the Army component commander develops a deployment plan. The location, nature, and intensity of the conflict will determine the composition of units needed and how they will be phased during deployment.

Employment. The scope and nature of the contingency influences both force organization and operations. Economy of force, mobility, surprise, and bold, aggressive actions should be emphasized to achieve decisive results. In keeping with the AirLand Battle doctrine, operations should be characterized by flexibility, imagginative leadership, thorough planning, and skillful, decentralized execution. Support from the other services is essential to the success of the Army mission in joint operations.

Commanders at appropriate levels maintain contingency plans for rapid force deployment. At the time of deployment and under guidance from the NCA, they modify these plans to fit existing conditions. The Army component for a contingency operation may consist of any size Army force—a small specialized element, a battalion or a brigade, a corps, or a multiple-corps force.

In planning to function as part of a joint force in a contingency operation, the Army component commander considers the operational environment and support requirements.

Operational considerations involve:

- The joint force mission and the land component's tasks.
- Assumptions under which the planning was conducted.
- The joint commander's concept of the operation.
- The probable or actual composition and size of land, air, and naval forces of the joint force and any allied force.
- Command relationships within the joint force.
- Specific operational aspects including fire support (all services), communications, nuclear and chemical warfare guidance, intelligence, psychological operations, and unconventional warfare.

- Enemy capability for ground, air, naval, electronic, and nuclear, biological, and chemical operations.
- Enemy capability for unconventional and psychological operations.
- Geography, weather, and terrain.
- The political situation and civil-military responsibilities.
- Language requirements.
- In-country facilities.

Support operations involve:

- Maximizing use of local resources.
- Limiting supplies to essentials.
- Formulating a maintenance policy.
- Formulating a medical evacuation policy.
- Maintaining and securing necessary stockage levels.
- Phasing in additional combat service support (CSS) capabilities with follow-up elements as required.

Force planners normally seek to maximize combat capability and to reduce support to the essentials. A contingency force relies heavily on strategic airlift for rapid deployment and resupply from continental United States (CONUS). Early air superiority, continuous tactical air support, logistic resupply by air, and maintenance of air lines of communications are essential for such an operation to be successful. Sealift of outsized equipment, armored units, and bulk supplies may be necessary. Additionally, the Army component of a joint force will have to provide certain CSS commodities, services, and facilities to other service components in the area of operations.

A lack of adequate communications and intelligence may hamper the initial phase of contingency force operations. Limited knowledge of the enemy may dictate that initial combat actions consist of a movement to contact or a reconnaissance in force. Long-range communication should be established early to ensure an effective flow of information for decisionmaking.

Contingency planning requires an all-source intelligence system organized to meet the needs of the commander of the deploying force before deployment. The intelligence planning process should be continuous and aggressively managed. It should develop, maintain, and update a data base that is keyed on worldwide contingency requirements. This data base incorporates intelligence preparation of the battlefield (IPB). On alert notification, the intelligence officer focuses efforts on the specific objective area and should rapidly provide the commander only that information that is critical to the combat operation.

Maintaining the intelligence data base permits commanders to identify intelligence gaps. These gaps become immediate collection requirements in a crisis. Updating the data base and satisfying intelligence gaps requires active coordination between the contingency force and national intelligence systems. National intelligence systems support for early deployed units play a key role in fulfilling commanders' intelligence needs. After deployment, these systems can supplement the contingency force's organic collection assets in the objective area.

Army forces in contingency operations should be more mobile than their potential enemy. To achieve superior mobility, they may need to include mechanized, armored, and aviation units. Although it is costly, mobility improves the commander's ability to fight.

Summary

National and theater strategy dictates that all major operations evolve as joint and combined operations. The national command authorities may direct contingency operations in support of specific national policy objectives. Joint and contingency operations will conform to shared doctrine and forces contributed to unified and specified commanders by the individual services. Combined operations will work in a similar fashion, with US forces joining our allies at the theater level. Joint, combined, and contingency operations are the only way that US forces will be employed over the spectrum of conflict.

APPENDIXES

Appendix A. Glossary of Acronyms, Abbreviations, and Definitions

Appendix B. Army Weapon Systems

APPENDIX A

Glossary of Acronyms, Abbreviations, and Definitions

The following list of acronyms, abbreviations, and definitions is extracted from FM 101-5-1. The terms in FM 100-5, *Operations* (used in preparing this text), and this text are compatible with Allied Tactical Publication 35(A), *Land Forces Tactical Doctrine*, and other NATO doctrine. They allow the user to operate in compliance with AirLand Battle doctrine and NATO doctrine without violating the precepts of either. The series of military graphics depict military units, the offense, the defense, and the sustainment operations.

AA	avenue of approach
AAP	Allied Administrative Publication
AASLT	air assault
abn	airborne
AC	active component
ACA	airspace coordination area
ACC	Army component commander
acft	aircraft
ACP	air control point
acq	acquisition
ACR	armored cavalry regiment
AD	armored division
ADA	air defense artillery
ADC	area damage control
ADM	atomic demolition munitions
admin	administrative
ADP	automatic data processing
AG	adjutant general
AGOS	air-ground operations system
AI	air interdiction
ALO	air liaison officer
ALOC	air line of communication
alt	altitude; alternate
AMC	air mission commander
ammo	ammunition
ANGLICO	Air-Naval Gunfire Liaison Company (USMC)
APC	armored personnel carrier
AR	Army regulation
armd	armored
arty	artillery
AS	area security
ASL	authorized stockage list
aslt	assault
ASM	air-to-surface missile
ASOC	air support operations center
A^2C^2	Army airspace command and control
ASP	ammunition supply point
assy	assembly
atk	attack
ATP	ammunition transfer point; Allied Tactical Publication
AVLB	armored vehicle launch bridge
avn	aviation

BAI	battlefield air interdiction
BCC	battlefield circulation control
BCE	battlefield coordination element
BCOC	base cluster operations center
bde	brigade
BDOC	base defense operations center
BE	Belgium
BG	brigadier general
BIFV	Bradley infantry fighting vehicle
bio	biological
BMNT	beginning (of) morning nautical twilight
bn	battalion
BP	battle position
BSA	brigade support area
btry	battery

C^2	command and control
C^3	command, control, and communications
C^3CM	command, control, and communications countermeasures
CA	Canada; course of action
CARS	combat arms regimental system
CAS	close air support
cav	cavalry
cbt	combat
CCP	communications checkpoint
CDM	chemical downwind message
CEOI	Communications-Electronics Operations Instructions
CEP	circular error probable
CEWI	combat electronic warfare and intelligence
CFA	covering force area
CFC	combined forces command
CFL	coordinated fire line
CFV	cavalry fighting vehicle
CG	commanding general; center of gravity
cGy	centigray
CHAP	Chaparral
CINC	commander in chief
CL	coordination line
cml	chemical
CMO	civil military operations
co	commanding officer; company
COHORT	CoHesion, Operational Readiness, Training
COL	colonel
comd	command
COMINT	communications intelligence
comm	communications
COMMZ	communications zone
COMSEC	communications security
CONPLAN	operations plan in concept format
const	construction
CONUS	continental United States
COSCOM	corps support command
CP	command post
CPL	corporal
CPT	captain

CRC	control and reception center
CS	combat support
CSM	command sergeant major
CSR	controlled supply rate
CSS	combat service support
CWO	chief warrant officer

DAO	division ammunition officer
DCA	defensive counterair
DGZ	desired ground zero
DISCOM	division support command
div	division
DLIC	detachment left in contact
DOD	Department of Defense
DPU	data processing unit
DS	direct support
DSA	division support area
DTG	date time group
DZ	drop zone

EA	engagement area
EAC	echelons above corps
E&E	escape and evade
ECCM	electronic counter-countermeasures
ECM	electronic countermeasures
EEI	essential elements of information
EENT	ending evening nautical twilight
eff	effective
ELINT	electronic intelligence
ELSEC	electronic security
EMCON	emission control
EMP	electromagnetic pulse
en	enemy
engr	engineer
EPW	enemy prisoner of war
equip	equipment
ESM	electronic warfare support measures
EW	electronic warfare
EWSE	electronic warfare support element

FA	field artillery
FAC	forward air controller
FARP	forward arming and refueling point
FAX	facsimile
FEBA	forward edge of the battle area
FFA	free fire area
FIST	fire support team
fld	field
FLOT	forward line of own troops
fltbrg	float bridge
FM	field manual; frequency modulated
FOB	forward operating base

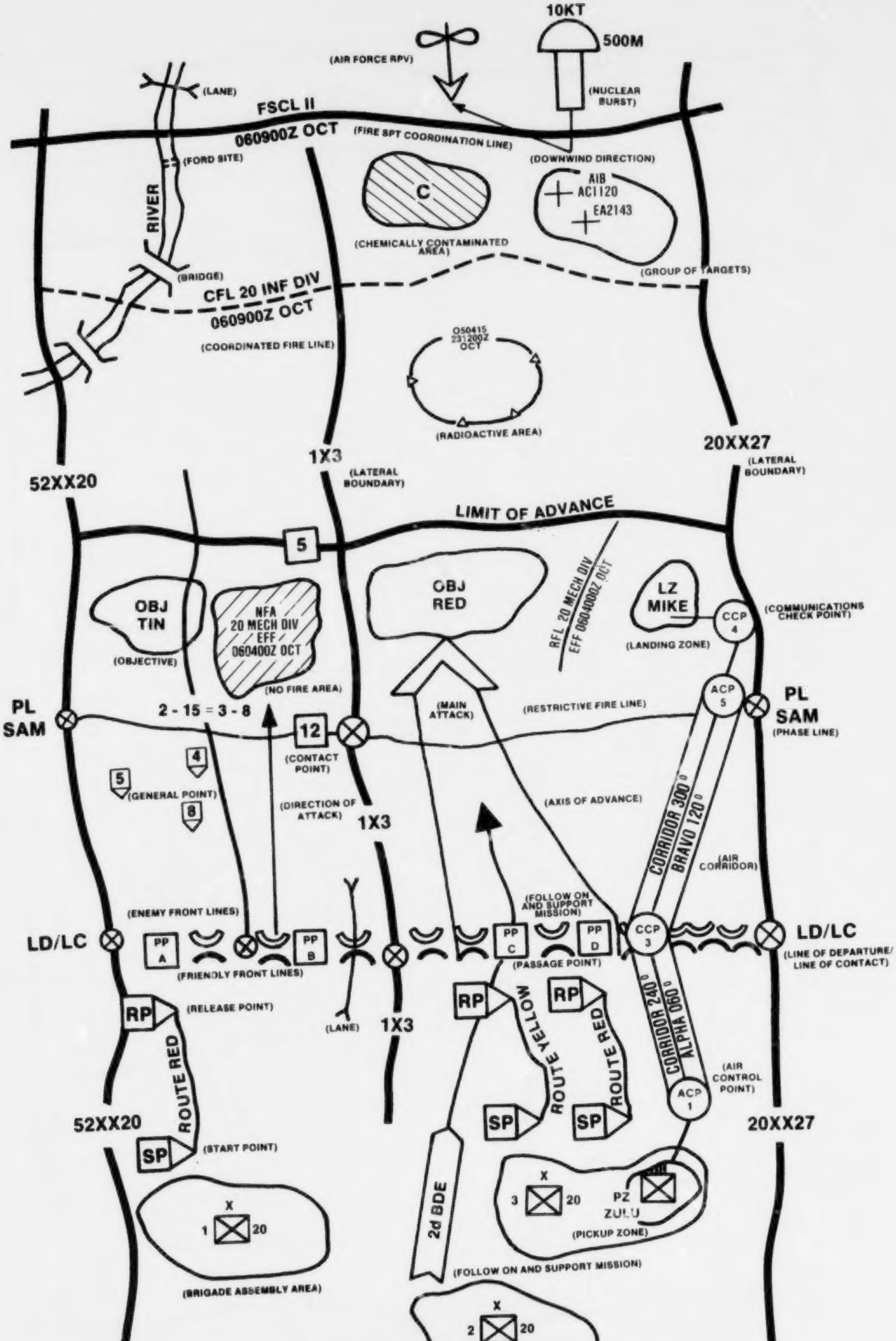
FORSCOM	US Army Forces Command
FPF	final protective fires
FPL	final protective line
FR	France
FRAGO	fragmentary order
FSB	forward support base; forward support battalion
FSCL	fire support coordination line
FSCOORD	fire support coordinator
FSE	fire support element
FSO	fire support officer
fwd	forward
GE	Germany
GEN	general
gp	gap; general purpose
GS	general staff; general support
GSR	general support reinforcing
G1-5	general staff (G1-personnel; G2-intelligence; G3-operations; G4-logistics; G5-civil military operations)
HE	high explosive
hel	helicopter
HF	high frequency
HIDACZ	high density airspace control zone
HIMAD	high-to-medium altitude air defense
HNS	host nation support
HOB	height of burst
HPT	high payoff target
HQ	headquarters
HVT	high value target
ICD	imitative communications deception
IDP	initial delay position
IFF	identification, friend or foe
IFV	infantry fighting vehicle
IG	inspector general
inf	infantry
IPB	intelligence preparation of the battlefield
IPW	interrogation of prisoners of war
IR	infrared; information requirement
JATT	joint air attack team
JCS	Joint Chiefs of Staff
JSCP	joint strategic capabilities plan
J-SEAD	joint suppression of enemy air defense
JTF	joint task force
JUWC	joint unconventional warfare command
JUWTF	joint unconventional warfare task force
km	kilometer
kt	kiloton

LC	line of contact
LCC	land component commander
LD	line of departure
LD/LC	line of departure is line of contact
LIC	low-intensity conflict
LID	light infantry division
LL	latent lethality dose; light line
LO	law and order
LOA	limit of advance
LOC	line of communication
LSD	least separation distance
lt	light
LTC	lieutenant colonel
LTD	laser target designator
LTG	lieutenant general
LZ	landing zone
m	meter
maint	maintenance
MAJ	major
max	maximum
MBA	main battle area
mech	mechanized
med	medical
MED	manipulative electronic deception
METT-T	mission, enemy, terrain, troops, and time available
MG	major general
MI	military intelligence
MICV	mechanized infantry fighting vehicle
MIJI	meaconing, intrusion, jamming, and interference
min	minimum
MLRS	multiple launch rocket system
mm	millimeter
MOPP	mission-oriented protective posture
MOUT	military operations on urbanized terrain
MP	military police
MRE	meals, ready to eat
MSD	minimum safe distance
MSG	master sergeant
MSR	main supply route
MST	maintenance support team
NAI	named area of interest
NATO	North Atlantic Treaty Organization
NBC	nuclear, biological, chemical
NCA	National Command Authority
NCO	noncommissioned officer
NCOES	noncommissioned officer education system
NEO	noncombatant evacuation operations
NFA	no-fire area
NLT	not later than
NTC	National Training Center (Fort Irwin, Calif.)

OAS	offensive air support
obj	objective
OCA	offensive counterair
OEG	operational exposure guide
OKOCCA	observation and fields of fire, key terrain, obstacles, cover and concealment, and avenues of approach
O/O	on order
OP	observation post
OPCOM	operational command
OPCON	operational control
OPFOR	opposing force
OPLAN	operation plan
OPMS	officer personnel management system
OPORD	operations order
ops	operations
OPSEC	operations security
OT	observer-target
PD	point of departure
pers	personnel
PFC	private first class
PIR	priority intelligence requirement
PL	phase line
PLD	probable line of deployment
plt	platoon
PM	provost marshal
PNL	prescribed nuclear load
POD	port of debarkation
POL	petroleum, oil, and lubricants
pp	passage point
psn	position
PSYOPS	psychological operations
pub	publication
PUP	pop-up point
PVT	private
PZ	pickup zone
RA	regular army
RAD	radiation absorbed dose
RAOC	rear area operations center
RAS	rear area security
RC	Reserve component
RD	radius of damage
rdo	radio
rdvu	rendezvous
recon	reconnaissance
REFORGER	REturn of FORces to GERmany
regt	regiment
REMS	remote sensors
RFA	restrictive fire area
RFL	restrictive fire line
RGR	ranger
RPV	remotely piloted vehicle

RS	radiation status
RSR	required supply rate
RT	radius of target
RV	radius of vulnerability
S	scatterable
SASP	special ammunition supply point
SEAD	suppression of enemy air defense
SECDEF	secretary of defense
sep	separate
SFC	sergeant first class
SFOB	special forces operational base
SGM	sergeant major
SGT	sergeant
SHORAD	short-range air defense
sig	signal
SIGINT	signals intelligence
SIGSEC	signal security
SITMAP	situation map
SJA	staff judge advocate
SLOC	sea line of communication
SO	special operations
SOF	special operations forces
SOP	standard operating procedure
S&P	stake and platform
S&T	support and transportation
SP	self-propelled; start point; strongpoint
SP4	specialist 4
spt	support
sqd	squad
sqdn	squadron
SSG	staff sergeant
SSM	surface-to-surface missile
STANAG	standardization agreement
SUPCOM	support command
svc	service
TAACOM	theater army area command
TAB	target acquisition battery
tac	tactical
TACC	tactical air control center
TACP	tactical air control party
TAF	tactical air force
TCP	traffic control point
TF	task force
tgt	target
TOC	tactical operations center
TOE	table of organization and equipment
TOT	time on target
trans	transportation
TRP	target reference point

UGS	unattended ground sensors
ui	unidentified
UK	United Kingdom
USAREUR	United States Army, Europe
USARS	US Army regimental system
UW	unconventional warfare
WO	warrant officer
Z	zulu time zone
1LT	first lieutenant
1SG	first sergeant
2LT	second lieutenant


10KT
500M
(AIR FORCE RPV)
(NUCLEAR BURST)
(LANE)
FSCL II
060900Z OCT
(FIRE SPT COORDINATION LINE)
(DOWNWIND DIRECTION)
(FORD SITE)
RIVER
C
(CHEMICALLY CONTAMINATED AREA)
AIB
AC1120
EA2143
(GROUP OF TARGETS)
(BRIDGE)
CFL 20 INF DIV
060900Z OCT
(COORDINATED FIRE LINE)
050415
231200Z
OCT
(RADIOACTIVE AREA)
1X3
(LATERAL BOUNDARY)
52XX20
20XX27
(LATERAL BOUNDARY)
LIMIT OF ADVANCE
5
OBJ TIN
(OBJECTIVE)
NFA
20 MECH DIV
EFF
060400Z OCT
(NO FIRE AREA)
OBJ RED
RFL 20 MECH DIV
EFF 060400Z OCT
LZ MIKE
(LANDING ZONE)
CCP 4
(COMMUNICATIONS CHECK POINT)
ACP 5
PL SAM
2 - 15 = 3 - 8
12
(MAIN ATTACK)
(RESTRICTIVE FIRE LINE)
PL SAM
(PHASE LINE)
(CONTACT POINT)
4
5
(GENERAL POINT)
8
(DIRECTION OF ATTACK)
1X3
(AXIS OF ADVANCE)
CORRIDOR 300°
BRAVO 120°
(AIR CORRIDOR)
(FOLLOW ON AND SUPPORT MISSION)
(ENEMY FRONT LINES)
LD/LC
PP A
PP B
PP C
PP D
CCP 3
LD/LC
(LINE OF DEPARTURE/ LINE OF CONTACT)
(FRIENDLY FRONT LINES)
(PASSAGE POINT)
RP
(RELEASE POINT)
(LANE)
1X3
RP
ROUTE YELLOW
RP
ROUTE RED
CORRIDOR 240°
ALPHA 060°
(AIR CONTROL POINT)
ACP 1
ROUTE RED
52XX20
SP
SP
SP
20XX27
(START POINT)
X
3
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PZ ZULU
(PICKUP ZONE)
X
1
20
2d BDE
(FOLLOW ON AND SUPPORT MISSION)
(BRIGADE ASSEMBLY AREA)
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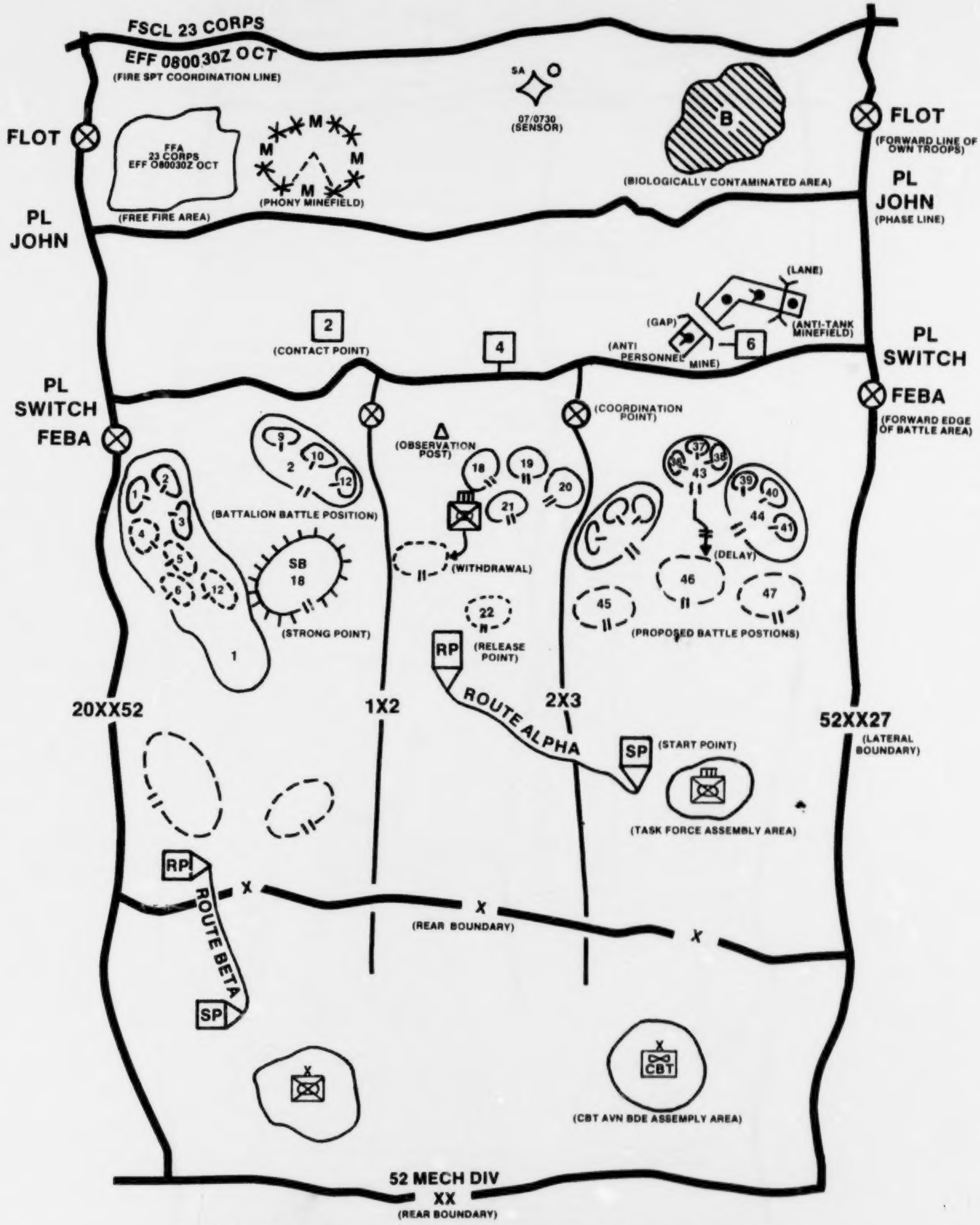
2
20

Control Measures Commonly Employed in the Offense

(This example is provided to illustrate graphical symbols and is not representative of a division operations overlay.)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EFF 080030Z OCT
(FIRE SPT COORDINATION LINE)
FLOT
FFA
23 CORPS
EFF 080030Z OCT
(FREE FIRE AREA)
M
(PHONY MINEFIELD)
SA
07/0730
(SENSOR)
B
(BIOLOGICALLY CONTAMINATED AREA)
FLOT
(FORWARD LINE OF OWN TROOPS)
PL
JOHN
PL
JOHN
(PHASE LINE)
(LANE)
(GAP)
(ANTI-TANK MINEFIELD)
2
(CONTACT POINT)
4
(ANTI PERSONNEL MINE)
6
PL
SWITCH
PL
SWITCH
FEBA
FEBA
(FORWARD EDGE OF BATTLE AREA)
(COORDINATION POINT)
(OBSERVATION POST)
9
10
2
12
(BATTALION BATTLE POSITION)
1
2
3
4
5
6
12
1
SB
18
(STRONG POINT)
18
19
20
21
(WITHDRAWAL)
22
(RELEASE POINT)
RP
37
38
36
43
39
40
44
41
(DELAY)
46
45
47
(PROPOSED BATTLE POSTIONS)
20XX52
1X2
2X3
52XX27
(LATERAL BOUNDARY)
ROUTE ALPHA
SP
(START POINT)
(TASK FORCE ASSEMBLY AREA)
RP
ROUTE BETA
SP
X
(REAR BOUNDARY)
X
CBT
(CBT AVN BDE ASSEMPLY AREA)
52 MECH DIV
XX
(REAR BOUNDARY)

Control Measures Commonly Employed in the Defense

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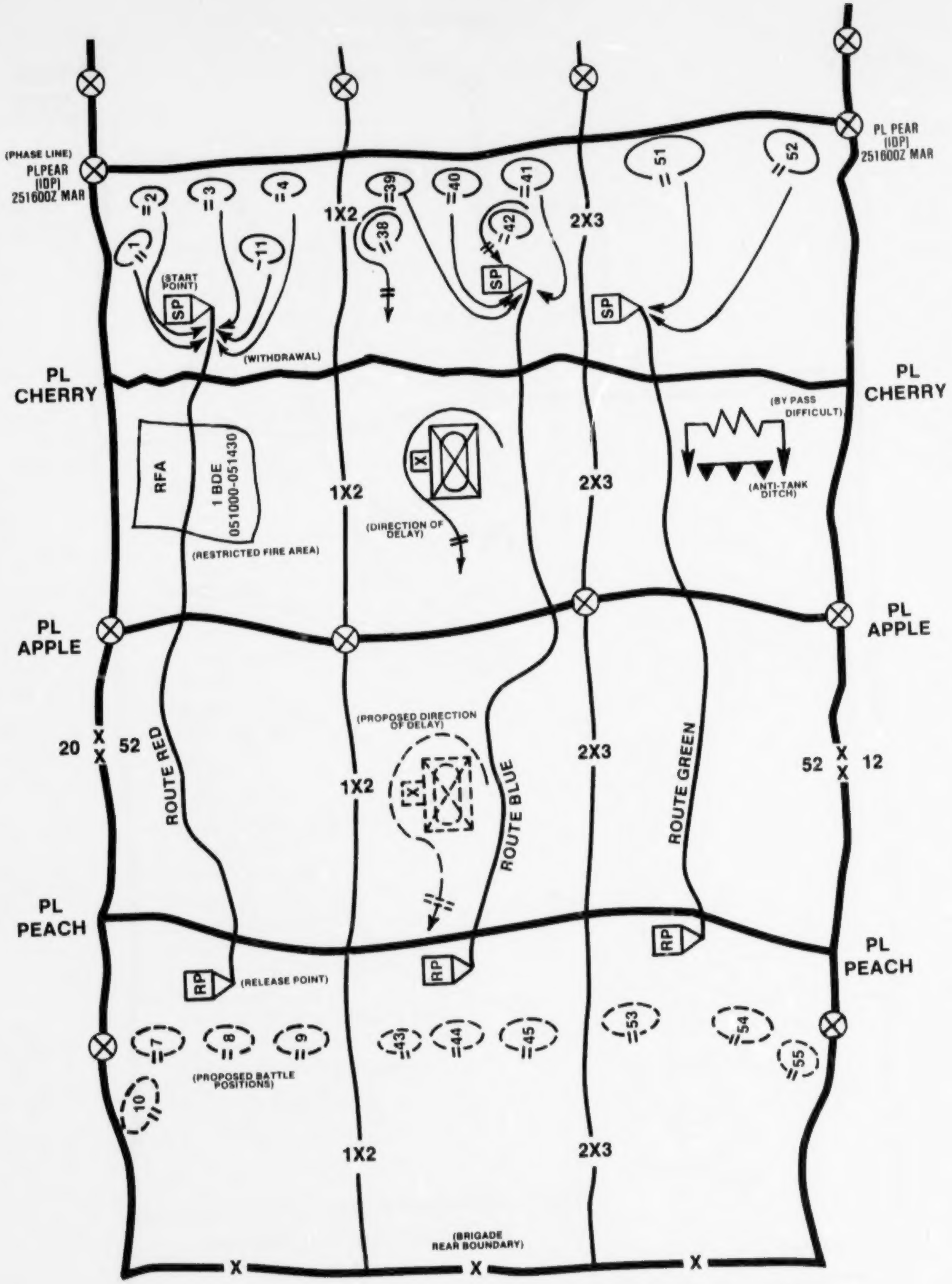
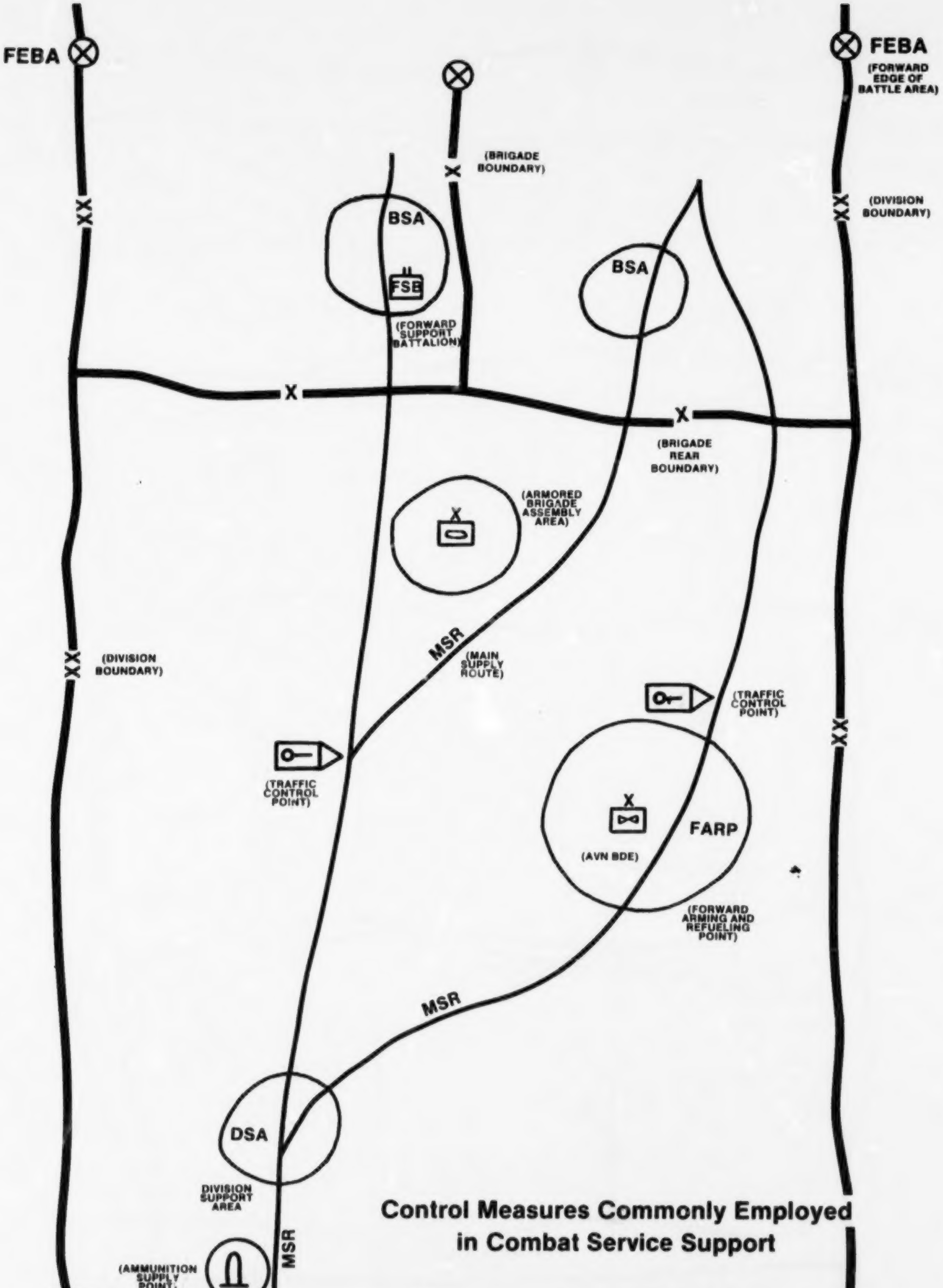

(PHASE LINE)
PLPEAR
(IDP)
251600Z MAR
PL PEAR
(IDP)
251600Z MAR
1
2
3
4
11
1X2
38
39
40
41
42
2X3
51
52
(START POINT)
SP
(WITHDRAWAL)
PL
CHERRY
PL
CHERRY
RFA
1 BDE
051000-051430
(RESTRICTED FIRE AREA)
1X2
X
(DIRECTION OF DELAY)
2X3
(BY PASS DIFFICULT)
(ANTI-TANK DITCH)
PL
APPLE
PL
APPLE
20
X
X
52
ROUTE RED
(PROPOSED DIRECTION OF DELAY)
1X2
X
ROUTE BLUE
2X3
ROUTE GREEN
52
X
X
12
PL
PEACH
PL
PEACH
RP
(RELEASE POINT)
7
8
9
10
(PROPOSED BATTLE POSITIONS)
43
44
45
53
54
55
1X2
2X3
(BRIGADE REAR BOUNDARY)
X
X
X

Control Measures Commonly Employed in Retrograde Operations


FEBA
FEBA
(FORWARD EDGE OF BATTLE AREA)
(BRIGADE BOUNDARY)
X
XX
(DIVISION BOUNDARY)
XX
BSA
FSB
(FORWARD SUPPORT BATTALION)
BSA
X
X
(BRIGADE REAR BOUNDARY)
X
(ARMORED BRIGADE ASSEMBLY AREA)
MSR
(MAIN SUPPLY ROUTE)
XX
(DIVISION BOUNDARY)
(TRAFFIC CONTROL POINT)
(TRAFFIC CONTROL POINT)
XX
X
FARP
(AVN BDE)
(FORWARD ARMING AND REFUELING POINT)
MSR
DSA
DIVISION SUPPORT AREA
(AMMUNITION SUPPLY POINT)
MSR
XX
(DIVISION REAR BOUNDARY)

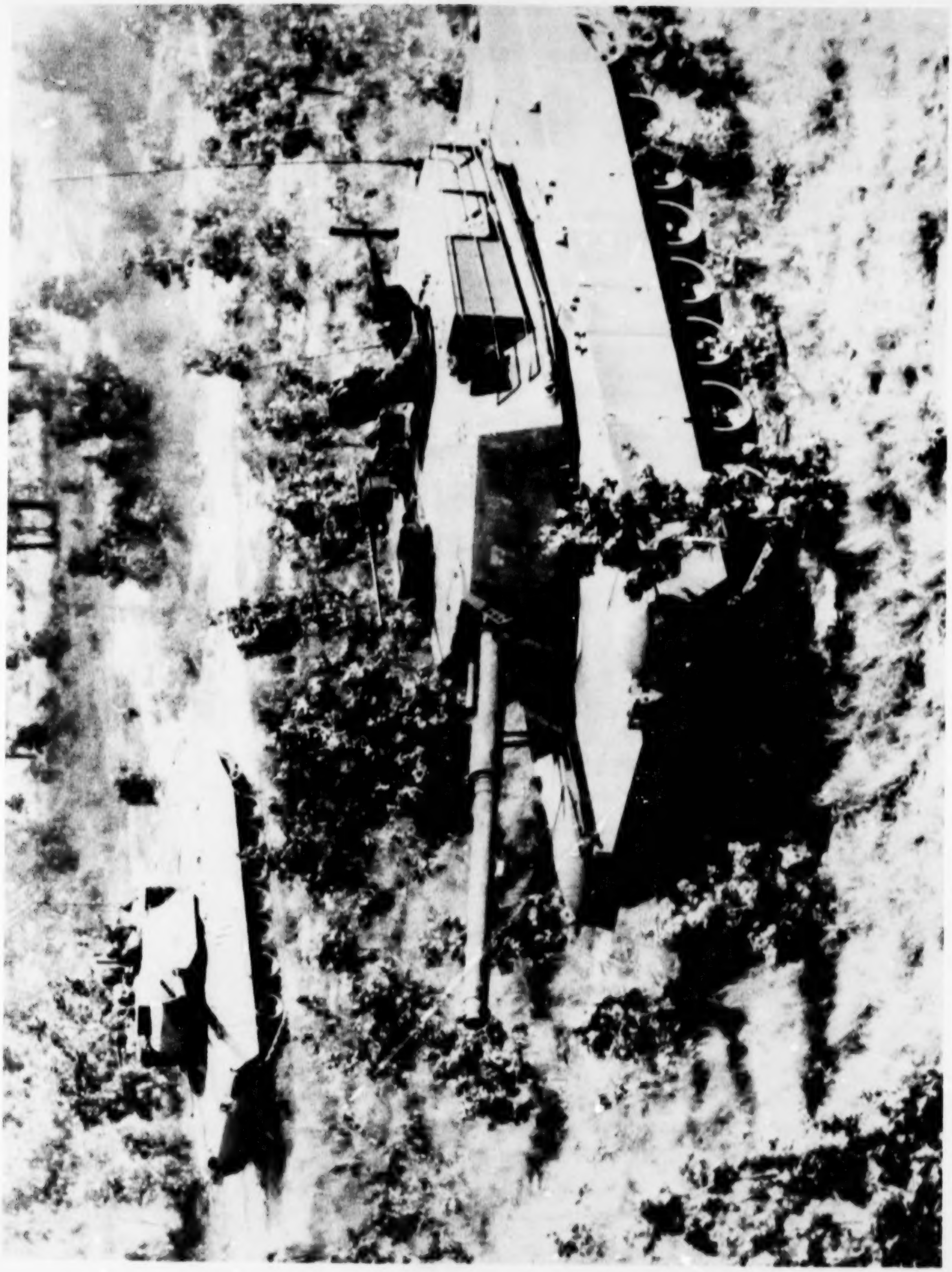
Control Measures Commonly Employed in Combat Service Support

]

APPENDIX B

Army Weapon Systems

	Name	*Page*
M1/M1A1	Abrams tank	B-2
M60A3	Tank	B-4
M2/M3	Bradley fighting vehicles	B-6
M113A3	Armored personnel carrier	B-8
M981	Fire support team vehicle	B-10
M9	9-mm personal defense weapon (pistol)	B-12
M16A2	Rifle	B-14
M249	Squad automatic weapon	B-16
	Dragon	B-18
M220	TOW missile system	B-20
	HUMVEE	B-22
OH58D	Army Helicopter Improvement Program	B-24
AH-1S	Cobra	B-26
AH-64	Apache	B-28
CH-47	Modernization (Chinook)	B-30
V-22	Aircraft (Osprey)	B-32
LHX	Light helicopter, experimental	B-34
UH-60A	Black Hawk utility helicopter	B-36
EH-60A	Quick Fix	B-38
OV-1D	Mohawk surveillance system	B-40
RC-12D	Guardrail V	B-42
	Stinger	B-44
M67	Chaparral	B-46
	Hawk	B-48
	Patriot	B-50
	Hellfire modular missile system	B-52
	Ground/vehicle laser locator designator	B-54
	Firefinder radars	B-56
M119	105-mm howitzer	B-58
M198	155-mm medium towed howitzer	B-60
M109A2/A3	Self-propelled howitzer/howitzer improvement	B-62
	Multiple launch rocket system	B-64
	Pershing II missile system	B-66
	Copperhead	B-68
	Aquila remotely piloted vehicle	B-70
	Single channel ground and airborne radio system (SINCGARS-V)	B-72
	Mobile subscriber equipment	B-74



M1/M1A1 ABRAMS TANK
(Mech infantry/armored divisions)

MISSION:

The Abrams tank is the Army's primary ground combat weapon system for closing with and destroying enemy forces using firepower, mobility, and shock action. This is accomplished in coordination with other ground and air systems under all battlefield conditions and levels of combat intensity. The Abrams special armor, compartmentalization of fuel and maingun ammunition which is stored away from the crew, together with an automatic fire detection and suppression system make it less vulnerable and more survivable on the modern battlefield. Its improved day-night fire control and shoot-on-the-move capability assure its ability to deliver highly accurate and lethal fires on both armored and unprotected targets. The 1500-horsepower turbine engine and improved suspension system permit the tank to move quickly across the battlefield, while reducing the tank's exposure to threat weapons.

CHARACTERISTICS:

	M1	*M1A1*
Length:	384.5 inches	387.0 inches
Width:	143.8 inches	Same
Height:	93.5 inches	Same
Weight:	60 tons	63 tons
Top speed:	45 mph	41.5 mph
Crew:	4	Same
Maingun:	105-mm	120-mm

	M1 and M1A1
Secondary armament:	One .50-cal machine gun
Armament:	Two 7.62-mm machine guns
Power train:	1500-hp gas turbine engine w/4 speed automatic transmission
Cruising range:	275 miles at 29 mph
Fire control:	Thermal imaging sight; laser rangefinder; digital computer

SOVIET COUNTERPART:

Over the past decade the Soviets have conducted an intensive armor modernization effort and have fielded several thousand T-64s and T-72s with enhanced armor protection and firepower. In addition, they are fielding the new T-80 tank that will probably be capable of launching an ATGM (Antitank guided missile) through the maingun tube.

PROGRAM STATUS:

The M1 in its sixth year of procurement had over 3,000 produced by the end of FY 1985. Fielding began in 1981 and will continue into the early 1990s. Twenty-three battalions were fielded at the end of FY 1985.Deliveries of the 120-mm-gun-equipped M1A1 with NBC overpressure protective system began in August 1985. The Army is also pursuing a product improvement program to assure the Abrams maintains its competitive position through the 1980s and beyond. M1 performance in the field has been impressive and has been conclusively demonstrated by M1 battalions on four REFORGER exercises in Europe.

M60A3 TANK
(Mech infantry, armored, regular infantry divisions)

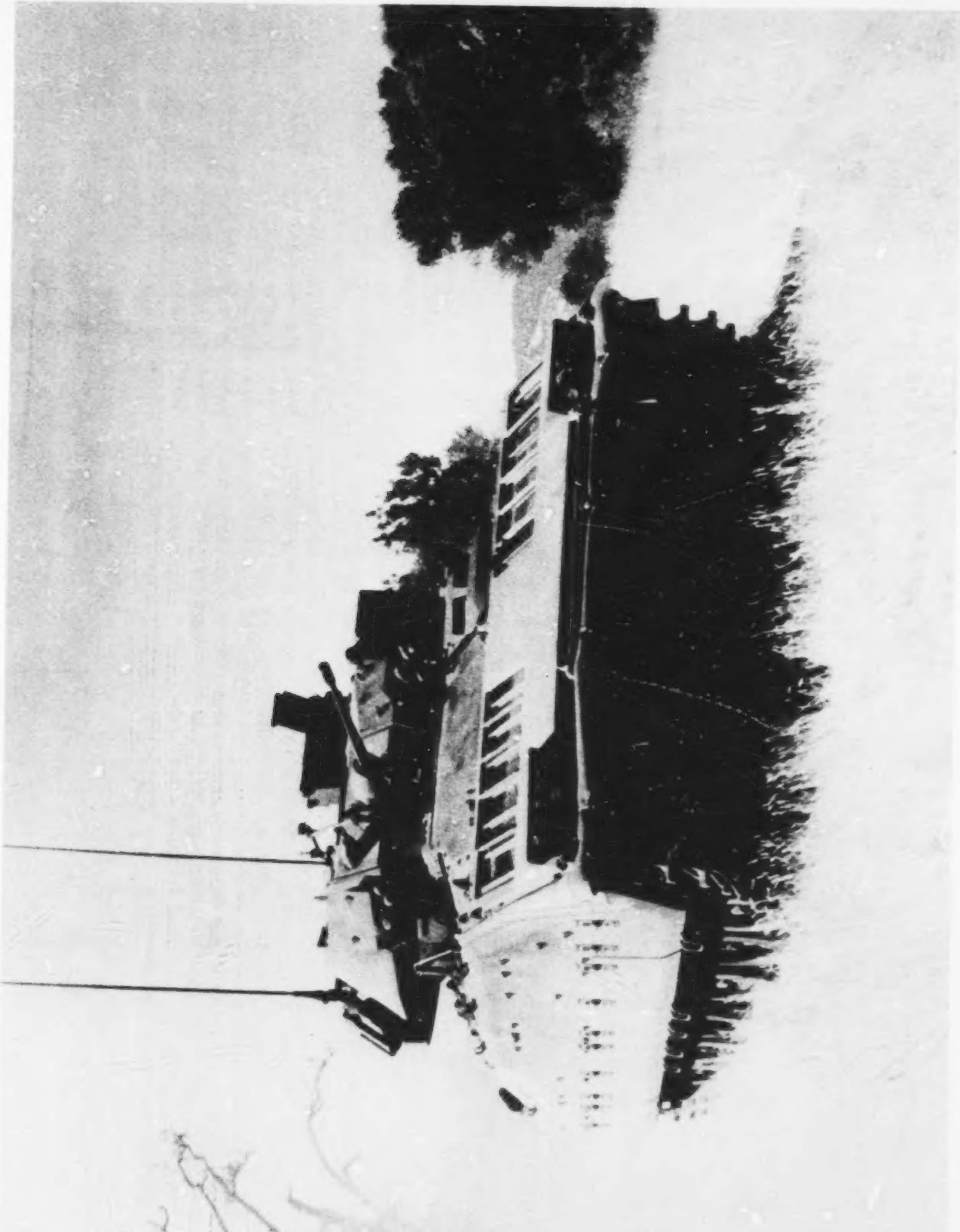
MISSION: The M60A3 is a product improved version of the Army's M60-series tank that has been in the field since 1961. Important improvements made to the M60A1 tank in the A3 upgrade program include gun stabilization, laser rangefinder, and solid-state computer and thermal shroud, which have enhanced the first-round hit capability. Further, the fighting capability of the M60A3 is significantly improved with the addition of a tank thermal imaging sight that extends capabilities during periods of reduced visibility. The M60A3 is replacing M60A1 tanks in both Europe and the United States.

CHARACTERISTICS:

Length:	371.5 inches	Secondary armament:	One .50-cal and one 7.62-mm machine gun,
Width:	144 inches	Power train:	12-cyl, 750-hp air-cooled diesel engine with two-speed automatic transmission
Height:	129 inches	Cruising range:	280 miles at 20 mph
Weight:	57.3 tons	Fire control:	Tank thermal sight; laser rangefinder; analog ballistics computer
Top speed:	30 mph		
Crew:	4		
Maingun:	105-mm		

SOVIET COUNTERPART: The T-62 medium tank was produced about the same time that the M60 family was fielded. The T-64 and T-72 possess better armor protection and a more-capable gun than the M60A3, however, they would be considered inferior in night-vision capability and fire control.

PROGRAM STATUS: New production of M60A3 tanks was completed in 1983 with 1,686 tanks produced. Currently, emphasis is being placed on converting M60A1 tanks in the inventory to M60A3 tank configuration. Conversions are being accomplished at Anniston and Mainz Army depots.



BRADLEY FIGHTING VEHICLE SYSTEM (BFVS)
INFANTRY FIGHTING VEHICLE (IFV)(M2) AND CAVALRY FIGHTING VEHICLE (CFV)(M3)
(Mech infantry/armored divisions)

MISSION: The Bradley fighting vehicles provide the mechanized infantry with a full-track, lightly armored fighting vehicle, and scout and armored cavalry units a vehicle for their screening, reconnaissance, and security missions. Both IFV and CFV have a two-person turret that mounts the 25-mm automatic stabilized cannon, its primary armament, supported by the TOW antitank guided missile system, and the 7.62-mm coaxial machine gun. The IFV has, in addition, six 5.56-mm firing port weapons positioned along the side and rear of the vehicle. The overall mobility of the vehicle is comparable to that of the M1 tank. The IFV carries a nine-person squad—commander, gunner, driver, and six squad members. A major modification, which incorporates the more lethal TOW II missile system into the vehicles, was made beginning in 1986; fielding to start in 1987. These modified vehicles have been designated M2A1 and M3A1.

CHARACTERISTICS:

Weight:	50,000 pounds (combat)	Crew:	3
Length:	21.5 feet	Power train:	500-hp diesel
Height:	9.75 feet	Cruising range:	300 miles
Width:	10.5 feet	Road speed:	42 mph
Main armament:	25-mm cannon	Swim speed:	4.5 mph
Secondary armament:	TOW, 7.62-mm coaxial MG, firing port weapons (IFV only)		

SOVIET COUNTERPART: The Soviet BMP has been in the field in quantity for well over a decade and is considered an excellent infantry fighting vehicle. It mounts a 73-mm smoothbore cannon, an AT3, AT4, or AT5 antitank guided missile, a SAGGER antitank missile, and permits the infantry squad to fire from the inside. A variant with a 30-mm gun, the BMP-2, has also been seen.

PROGRAM STATUS: Bradley production has built up to a rate in excess of 50 vehicles per month and vehicle fielding is proceeding smoothly. To date the 2d Armored Division and 1st Cavalry Division, Fort Hood, Texas, the 3d Infantry Division and the 11th Armored Cavalry Regiment in West Germany, and two National Guard battalions have been equipped with Bradley fighting vehicles.

M113A3 ARMORED PERSONNEL CARRIER
(Mech infantry, armored, regular infantry divisions)

MISSION: The M113A3 is a product improved, aluminum armored, full-tracked personnel carrier designed to transport troops, equipment, and cargo during combat operations. The A3 configuration adds spall suppression liners, armored external fuel tanks, an upgraded engine and transmission to accommodate the added weight, and fixing points for bolt-on armor. It operates in numerous roles including: infantry and engineer squad carrier, mortar carrier, missile carrier, command post, med-evac carrier, maintenance support vehicle, and other special roles. The M113 carrier fleet will continue to be improved for service in these capacities beyond the year 2000. Because of its mobility, firepower, and armor protection limitations, it cannot fulfill the role of a fighting vehicle and is being replaced in squad carriers and scout vehicle roles of high priority mechanized infantry and cavalry units by the Bradley fighting vehicles.

CHARACTERISTICS:

Weight:	27,200 pounds	Armament:	50-cal machine gun
Armor:	Aluminum	Horsepower:	275
Road speed:	45 mph	Troop capacity:	11
Cross-Country:	20 mph		

SOVIET COUNTERPART: The Soviet wheeled BTR-60, BTR-70, and new BTR-80 series amphibious armored personnel carriers are roughly equivalent in function to the M113. The MTLB amphibious, multipurpose, tracked carrier is used to carry infantry and as a prime mover for towed artillery and antitank guns.

PROGRAM STATUS: Deliveries of the new M113A3 production began in the 4th quarter FY 1986. A modification program is now under way to implement the congressionally directed survivability improvement upgrades to the existing M113A2s. These vehicles will be redesignated the M113A3. Appliqué armor is being developed and will be available for application to selected carriers in the fleet by FY 1988.

FIRE SUPPORT TEAM VEHICLE (FISTV) (M981)

(Maneuver battalions—mech infantry, armored, regular infantry divisions)

MISSION:

The M981 or FISTV is a modified M113A2 armored personnel carrier that gives the field artillery's fire support teams the capability to rapidly direct mortar, artillery, and air-delivered fire support using any of its four radios. It is also used to designate targets for laser guided munitions such as Copperhead and Hellfire. In order to perform these functions, this vehicle is equipped with a Ground/Vehicle Laser Locator Designator (G/VLLD), a northseeking gyrocompass, and a position locating and reporting system (PLRS). These electronic components enable rapid generation of very accurate target location data that is transmitted to the artillery battalion's fire direction center by an on board four-channel digital message device. The FISTV also provides crew protection against small arms fire and fragmenting artillery. Tactical missions performed include surveillance, target acquisition, target designation, location, and communications.

CHARACTERISTICS:

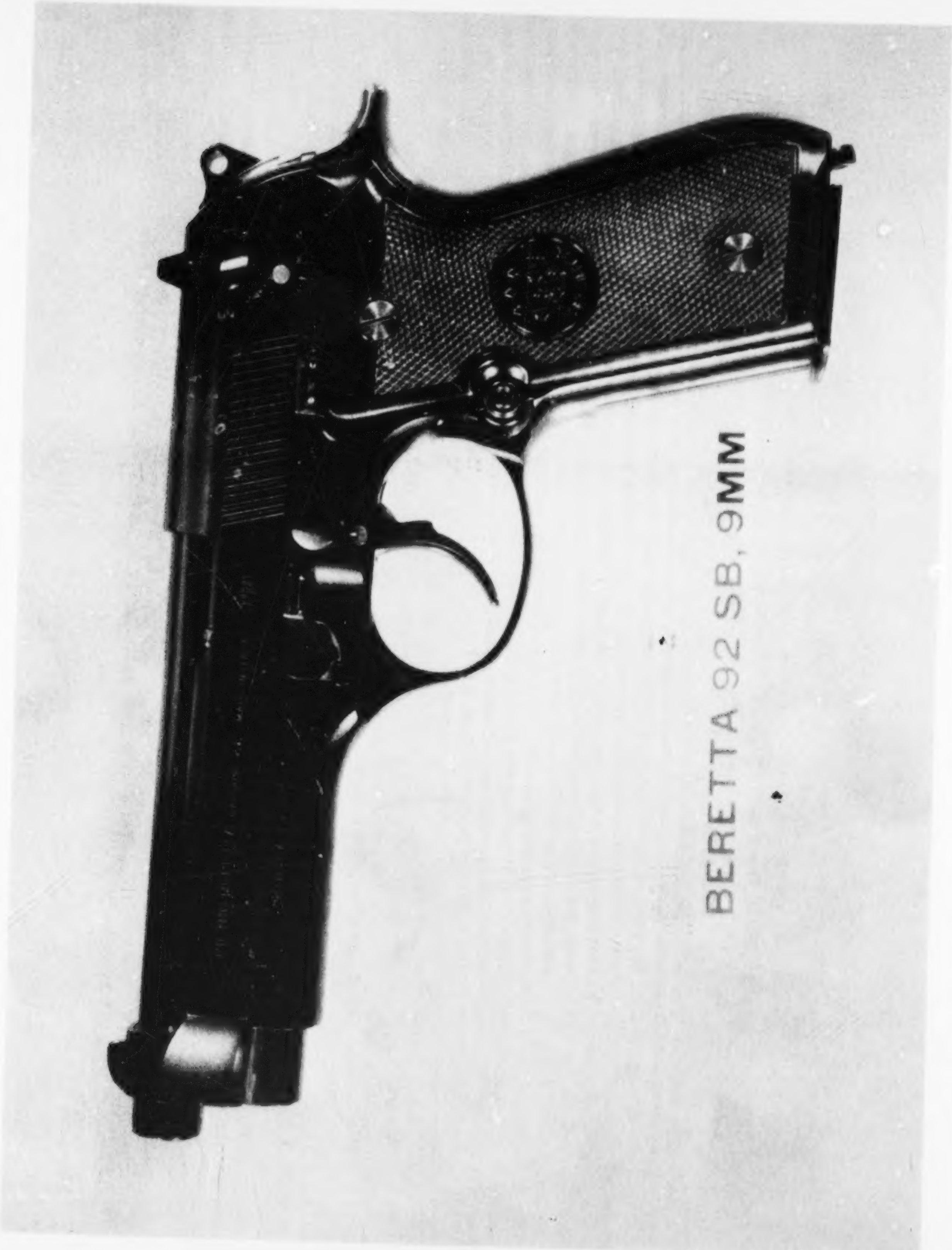
Weight:	26,300 pounds
Range:	300 miles
Cross-Country speed:	19 mph
Armament:	7.62-mm machine gun
Crew size:	4

SOVIET COUNTERPART:

The ACRV-2 is a Soviet vehicle found at battery and battalion level and artillery liaison teams. It weighs 30,000 pounds and supports a crew of five and is equipped with a number of target acquisition devices.

PROGRAM STATUS:

Delivery of the first production model of the FISTV was in December 1984. A total of 729 kits were scheduled for procurement through FY 1986. The first unit equipped was the 24th Infantry Division, Fort Stewart, Georgia, in August 1985. Fielding scheduled through FY 1987 will be to Korea and West Germany.



BERETTA 92 SB, 9MM

M9 9-MM PERSONAL DEFENSE WEAPON

MISSION:

The 9-mm pistol is the standard replacement weapon for the caliber M1911Al .45-caliber pistol and various caliber .38 revolvers currently used by the Department of Defense. The 9-mm is a semiautomatic double-action pistol that is more lethal, lighter, and safer than the .45-caliber pistol. It can be used effectively by either right- or left-handed shooters. The weapon will be issued to individuals who are not riflemen, or who are not issued rifles for personal defense, for law enforcement personnel, close quarter requirements, and aviators. The 9-mm pistol is a Joint Service Program. It will result in a standardized weapon capable of firing NATO standard 9-mm ammunition.

CHARACTERISTICS:

Caliber:	9-mm
Weight (loaded):	2.6 pounds (fully loaded)
Range (meters):	50–100 meters
Trigger action:	Double
Magazine capacity:	15 rounds

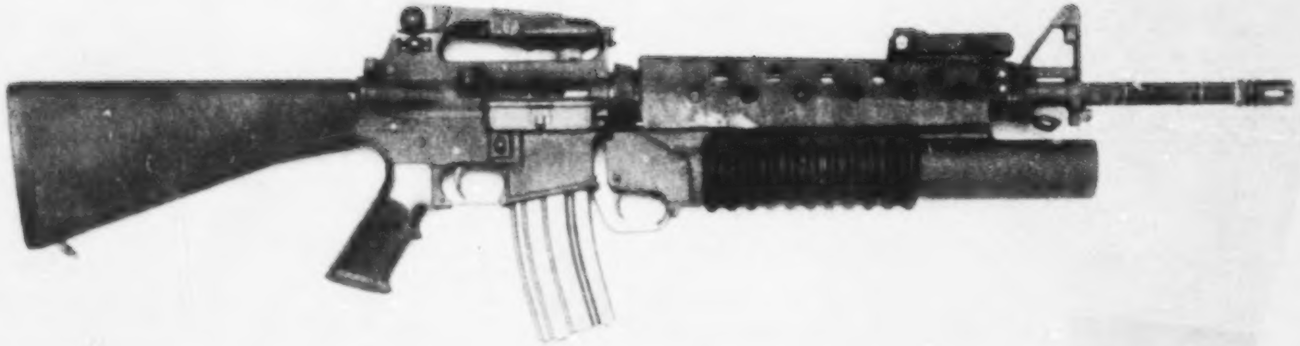
SOVIET COUNTERPART:

The 9-mm Makarov is the standard pistol for the Soviet forces and for most of the countries in the Warsaw Pact. It is a copy of the Walther PP in general size, shape, and handling.

Caliber:	9-mm
Weight:	1.8 pounds
Range:	50 meters
Trigger action:	Double
Magazine capacity:	8 rounds

PROGRAM STATUS:

The 9-mm personal defense weapon is being procured for the joint services. An initial five year, multiyear firm fixed-price contract was awarded in April 1985 for 315,930 weapons. Deliveries began during the third quarter FY 1986.



M16A2 5.56-mm rifle
with the M203
40-mm grenade
launcher attached

M16A2 RIFLE

MISSION: The M16A2 is an improved version of the M16A1 and will be issued to frontline combat soldiers as the Army's primary combat rifle. The M16A2 is a lightweight, air-cooled, gas-operated, low-impulse rifle. It incorporates improvements in sight, pistol grip, stock, and overall combat effectiveness. A current Army effort will enhance the combat effectiveness of the rifle by modifying the upper receiver to accept day optical and night sights. The improvement will be on all M16A2s that the Army buys. Accuracy is improved by incorporating an improved muzzle compensator, three-round burst control, a heavier barrel and by using the heavier NATO standard ammunition.

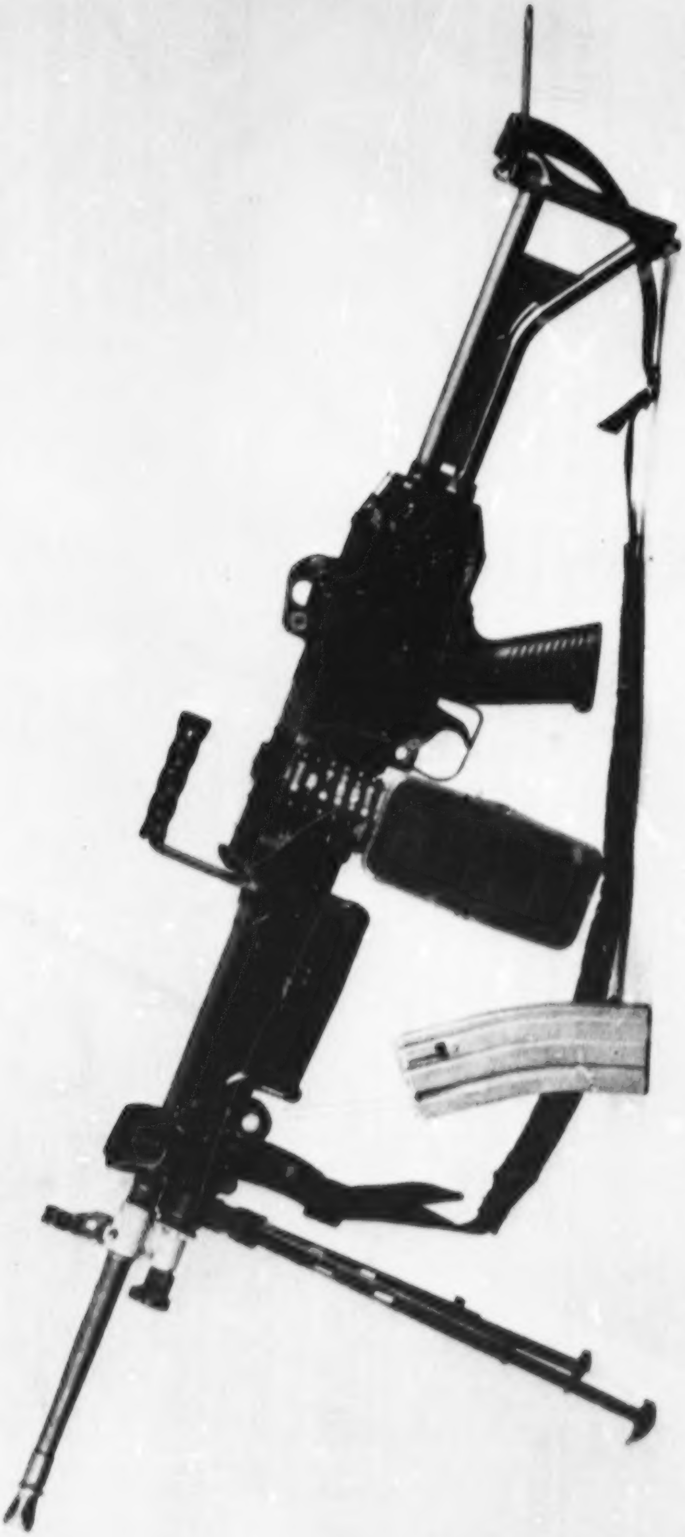
CHARACTERISTICS:

Caliber:	5.56-mm
Weight:	8.9 pounds
Range:	550 meters
Type of fire:	Semiautomatic, three-round burst
Magazine capacity:	30 rounds

SOVIET COUNTERPART: The 7.62-mm AK-47 has been the standard rifle of the Soviet army since 1957 and is now the standard weapon for the Soviet navy and air force ground troops.

Caliber:	7.62-mm
Weight:	9.5 pounds
Range:	30 meters
Type of fire:	Semi- and full-automatic
Magazine capacity:	30 rounds

PROGRAM STATUS: The M16A2 is in production; initial deliveries to the Army were in 1986.



SQUAD AUTOMATIC WEAPON (M249)

MISSION:

The squad automatic weapon provides a lightweight, one-person-portable, base of fire for infantry squads. This role was filled during World War II and Korea by the Browning automatic rifle, during the 1960s by the M14A1 rifle, and during the 1970s by the M16A1 rifle. For this role, the M16A1 was equipped with a bipod and fired in the automatic mode. There are two and three M249s in Army and Marine Corps infantry squads, respectively. Acquisition is also expected by the Air Force and Navy. Modifications are being made to the weapon to enhance soldier-weapon interface.

CHARACTERISTICS:

Caliber:	5.56-mm
Weight:	14.3 pounds
Rate of fire:	700 rounds per minute
Range:	800 meters
Magazine capacity:	200 rounds

SOVIET COUNTERPART:

The closest Soviet equivalent systems are the 7.62-mm PKM and the 5.45-mm RPK 74 which are fielded with Soviet and Warsaw Pact nations.

	PKM	*RPK* 74
Caliber:	7.62-mm	5.45-mm
Weight:	18.5 pounds	11 pounds
Rate of fire:	650 rounds per minute	600 rounds per minute
Range:	1,000 meters	800 meters
Magazine capacity:	100 rounds	75 rounds

PROGRAM STATUS:

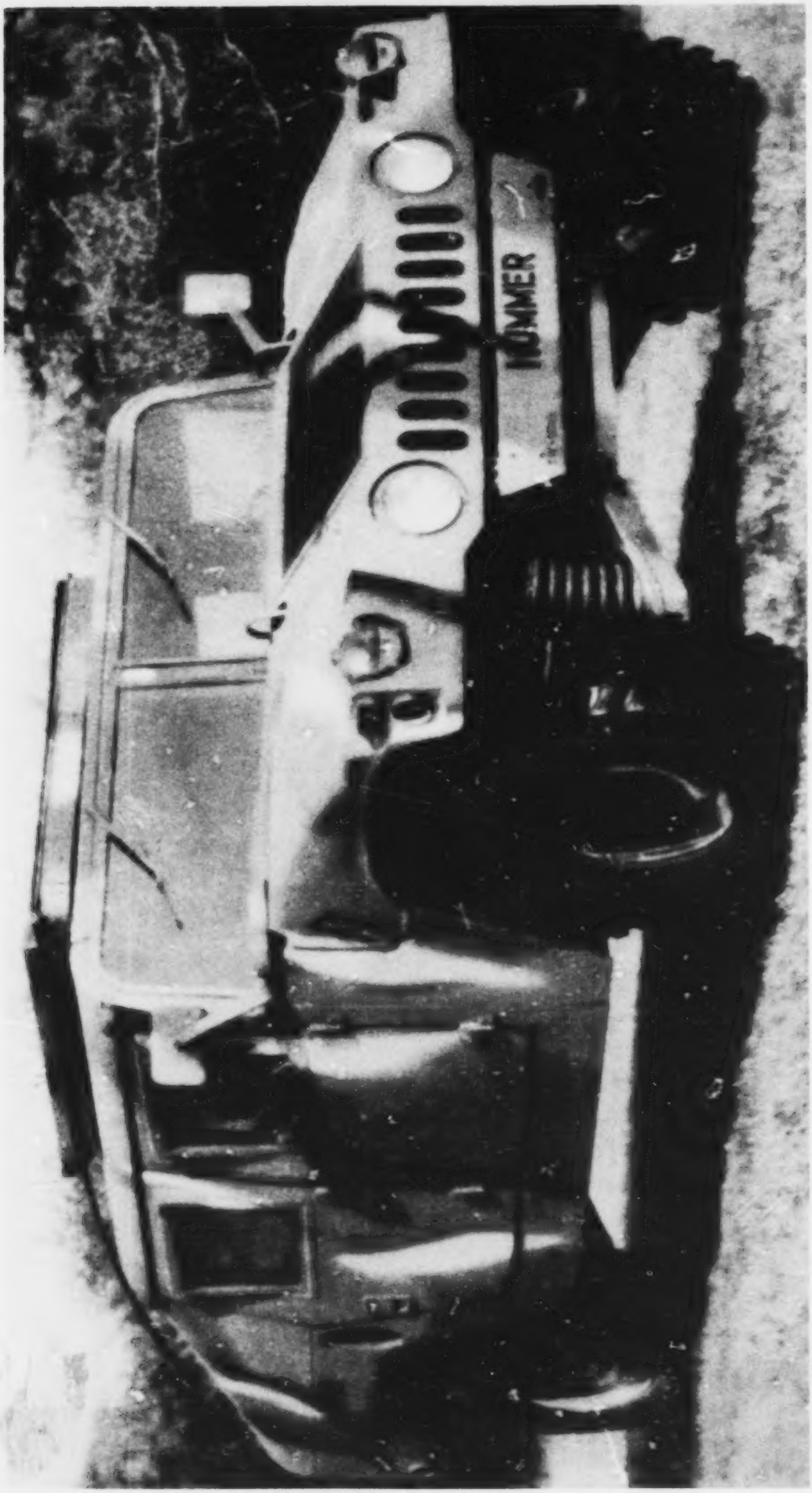
The M249 was type classified in February 1982. Fielding started in FY 1984.

DRAGON

MISSION:	Dragon is a medium-range, wire-guided antitank missile that replaced the 90-mm recoilless rifle. It is designed to provide an accurate person-portable antitank capability at platoon level. A Dragon gunner need only keep the sight crosshairs on the target to score a hit. An electronic mechanism in the launcher tracks an infrared flare in the tail of the missile and keeps it aligned with the gunner's line of sight via commands sent along two thin wires. Course corrections are made by tiny thrusters in the body of the missile.	
CHARACTERISTICS:	Weight (tracker): Weight (missile): Range: Crew:	6.5 pounds 24.4 pounds 1,000 meters 1
SOVIET COUNTERPART:	The Soviets have fielded a shoulder-fired ATGM (AT-7) that is comparable to the Dragon.	
PROGRAM STATUS:	Dragon is deployed in Army units and is out of production. Some of the missile inventory is suffering from a short shelf life of the rocket thrusters that are being upgraded. The United States Marine Corps (USMC) is about to develop a "maxi-PIP" product improvement to include warhead upgrade, guidance, and missile improvements. The Army plans to adopt the USMC warhead product improvements.	

TOW MISSILE SYSTEM (M220)
(Infantry battalions—all divisions)

MISSION:	The TOW (tube-launched, optically tracked, wire command-link, guided) missile is the most powerful antitank weapon used by the infantry. It is found at battalion level in ground units and is also mounted on the Bradley fighting vehicle, improved TOW vehicle, the high mobility multipurpose wheeled vehicle (HMMWV), and on the AH-1S Cobra helicopter. When the missile is fired, a sensor in the launcher tracks a flare in the tail of the missile. The gunner need only keep the crosshairs on the target. A computer in the launcher corrects any deviation of the missile from the crosshair aim point and sends corrections to the missile via two extremely thin wires that deploy in flight. The warhead is powerful enough to frontally penetrate the majority of presently fielded main battle tanks.
CHARACTERISTICS:	Weight (ground launcher): 246 pounds Weight (missile-cased): 62.4 pounds Range: 3,750 meters Crew: 4
SOVIET COUNTERPART:	The Soviets have fielded a family of semiautomatic, command to line-of-sight, antitank guided missiles similar to the TOW. The AT-4/SPIGOT is a crew-served system with a maximum range of 2,000 meters. AT-5/SPANDREL is the vehicular-mounted version with a larger missile and a maximum range of 4,000 meters. AT-6/SPIRAL is the heliborne ATGM mounted on the HIND-E and has a range of 5,000 meters.
PROGRAM STATUS:	Basic TOW has been in the inventory for a number of years. A TOW thermal night sight and an improved warhead-ITOW have been fielded. Production of the new TOW 2 missiles and modification kits to convert basic launchers to the TOW 2 configuration is in progress. Deliveries of these missiles and launcher modification kits began in early 1983. Initial operational capability was met in October 1983 in Europe. TOW is now fielded in Europe, Korea, Panama, and selected CONUS units. There is an aggressive product improvement program that will ensure TOW weapon system effectiveness into the 1990s.


HUMMER

HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE (HMMWV) (HUMVEE)

MISSION:	The HMMWV program provides a successor to the M274 (½-ton MULES), all 1-¼-ton trucks (GAMA GOATS), and selected M151 Jeeps (¼-ton). HMMWVs will be used in the airborne, airmobile, and light infantry division as the weapons carrier for the TOW missile and will also fill roles as reconnaissance, fire support, communication, personnel transport, and command and control vehicles and ambulances in various other Army units. This high-mobility 4x4 vehicle is diesel powered and uses a common chassis with various body configurations to meet the above requirements. This triservice program also provides vehicles to satisfy Marine Corps and Air Force requirements. The HMMWV is a complementary program to the nondevelopmental commercial utility and cargo vehicle (CUCV).
SOVIET COUNTERPART:	No known Soviet counterpart.
PROGRAM STATUS:	In 1983 a five-year multiyear contract was awarded for a basic quantity of 54,973 vehicles (all services) with an option to increase production by 100 percent.

ARMY HELICOPTER IMPROVEMENT PROGRAM (AHIP) (OH- 58D)

(All divisions)

MISSION: AHIP provides commanders with a survivable, real-time combat information, command and control, reconnaissance, security, aerial observation, and target acquisition/designation system. This system operates with attack helicopter, air cavalry and field artillery units during day, night, and reduced-visibility conditions. The AHIP is a program to modify OH-58A observation helicopters with a mast-mounted sight (MMS) capable of operating in day/night and limited-visibility conditions. The MMS enhances survivability by allowing the aeroscout crew to accomplish their mission while hovering behind trees and hilltops. It provides target acquisition and laser designation at standoff ranges for Hellfire, Copperhead, and other Army and Air Force laser-guided munitions. Aircraft performance also provides an acceptable hot-day, high-altitude nap of the earth and flight maneuver capability for worldwide employment.

CHARACTERISTICS:

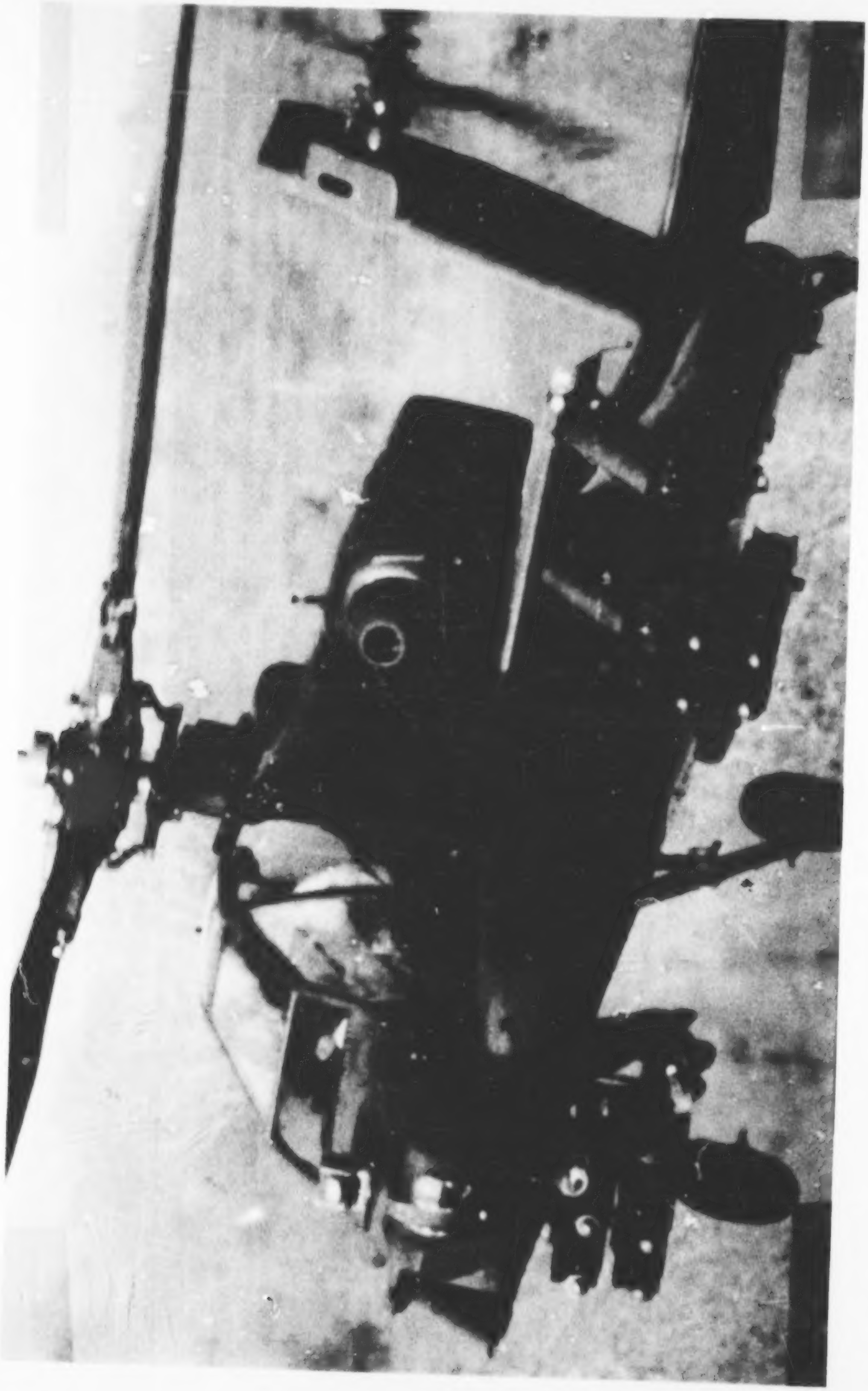
Mission weight: 4,225 pounds
Speed: 120 knots
Crew: 2

SOVIET COUNTERPART: The Soviets and Poles are believed to be working on new lightweight helicopters, but they are not expected to have a role similar to AHIP.

PROGRAM STATUS: The AHIP program is in production.

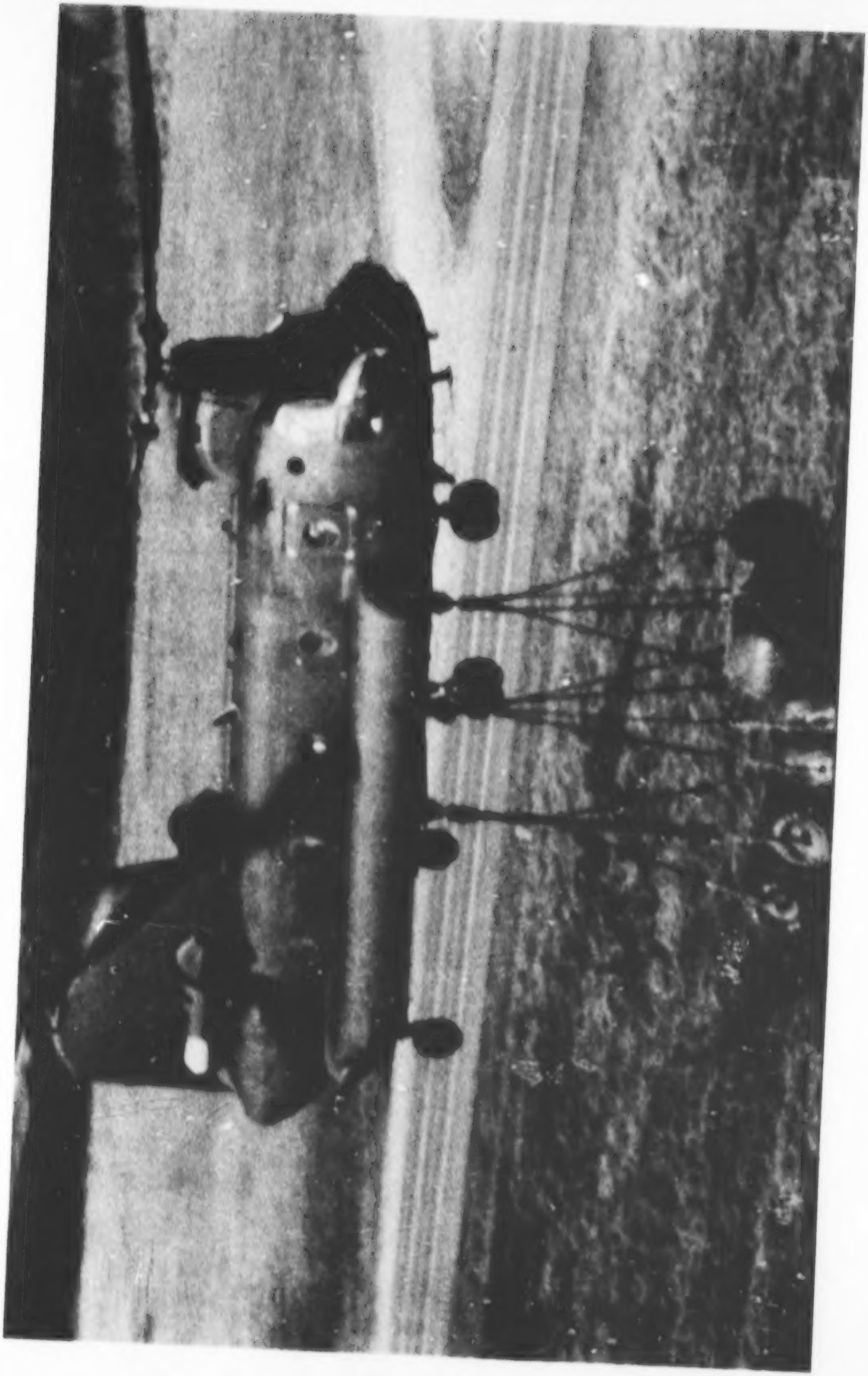
AH-1S COBRA
(All divisions)

MISSION:	The AH-1, which saw extensive combat in Vietnam, is a single-engine, two-place, attack helicopter. In its original "G" configuration it was an excellent weapon against enemy personnel and lightly armored vehicles, but had no capability against tanks. The tube-launched, optically tracked, wire-guided (TOW) missile was mated with the AH-1 to produce the TOW/Cobra, or AH-1S. The AH-1S began service in 1977, and today the fully modernized version is operational in Europe and Korea. The Cobra, while an effective weapon system, is limited in performance and largely limited to fair weather. In addition, the TOW missile is wire guided, and the launching aircraft must keep the target in its sights until missile impact, tending to expose the aircraft to enemy missile and gun fires. These and other performance, lethality, and survivability considerations led the Army to begin the AH-64, Apache program. The Cobra, however, will remain in service in a complementary role long after the fielding of the Apache. The Cobra's primary mission is to destroy armor vehicles, but it is also equipped with the Hydra 70 multipurpose submunition rockets and 20-mm cannon that are effective against other targets.
CHARACTERISTICS:	Mission weight: 10,000 pounds Speed: 129 knots Crew: 2 Armament: TOW missiles, Hydra 70 rockets and 20-mm cannon
SOVIET COUNTERPART:	The Soviet HIND-D/E attack helicopters hold a considerable advantage over the Cobra in terms of ordnance capacity, cargo capacity, armor protection, and speed. The Soviets are also expected to deploy two new attack helicopters in the near future.
PROGRAM STATUS:	The Army plans to provide its Cobras with night-firing capability and will continue to convert remaining AH-1G models to the AH-1S configuration. The Cobra fleet life extension program (C-FLEX) incorporates numerous life extension modifications including rotor improvements, blue-green cockpit lighting, improved TOW and TOW test-set reliability, and upgraded radios.



AH-64 APACHE
(Will replace AH-1 Cobra in all divisions)

MISSION:	The Apache is a quick-reacting, airborne antitank weapon. Terrain limitations and the unfavorable balance in armor dictate the need for a system that can fly quickly to the heaviest enemy penetration and destroy, disrupt, or delay the attack long enough for friendly armor and ground units to reach the scene. The Apache is designed to fight worldwide and survive. It is equipped with a target acquisition designation sight and pilot night vision sensor (TADS/PNVS) that permit its two-member crew to navigate and attack in darkness and in adverse weather conditions. Although the principal mission of the Apache is the destruction of enemy armor with the Hellfire missile, it is also equipped with a 30-mm chain gun and Hydra 70 rockets that are lethal against a wide variety of targets. The Apache, the Army's primary attack helicopter, began deployment in FY 1986 and will be complemented by the Cobra that is now in the field.
CHARACTERISTICS:	Mission weight: 14,660 pounds Speed: 146 knots Crew: 2 Armament: Hellfire missiles, Hydra 70 rockets and 30-mm chain gun
SOVIET COUNTERPART:	The Soviets have deployed significant numbers of HIND attack helicopters. This helicopter is capable of delivering antitank guided missiles, antiaircraft missiles, unguided rockets, Gatling gun fire (cannon fire on some), and bombs. Though the HIND is faster than the Apache, it is considered less maneuverable, probably more vulnerable, and less capable of accurate antiarmor fire in darkness and adverse weather. The HIND is more capable than the presently fielded US Cobra. The Soviets are also expected to deploy two new attack helicopters very similar to the Apache, in the near future.
PROGRAM STATUS:	Apache is in production: The first 45 have been delivered to the Army. Production contracts for 309 aircraft are ongoing. The current total program will procure 675 AH-64s.



CH-47 MODERNIZATION
(101st ABN div [AASLT] and corps Avn Bdes)

MISSION:

The CH-47 Chinook is the Army's medium-lift helicopter. Designed in the 1950s and fielded in 1962, the CH-47's primary missions are movement of ammunition, repair parts, and petroleum and the tactical movement of artillery, troops, and special weapons on the battlefield. In 1975 a modernization program was approved to upgrade the CH-47A, B, and C models into a new D-model configuration. These improvements extend the useful life of the fleet beyond the year 2000. They include new fiberglass rotor blades, transmission and drive system, modularized hydraulics, electrical system, advanced flight controls, triple-hook cargo system, and an auxiliary power unit. These features greatly enhance reliability, maintainability, productivity, survivability, and safety of the medium-lift fleet.

CHARACTERISTICS:

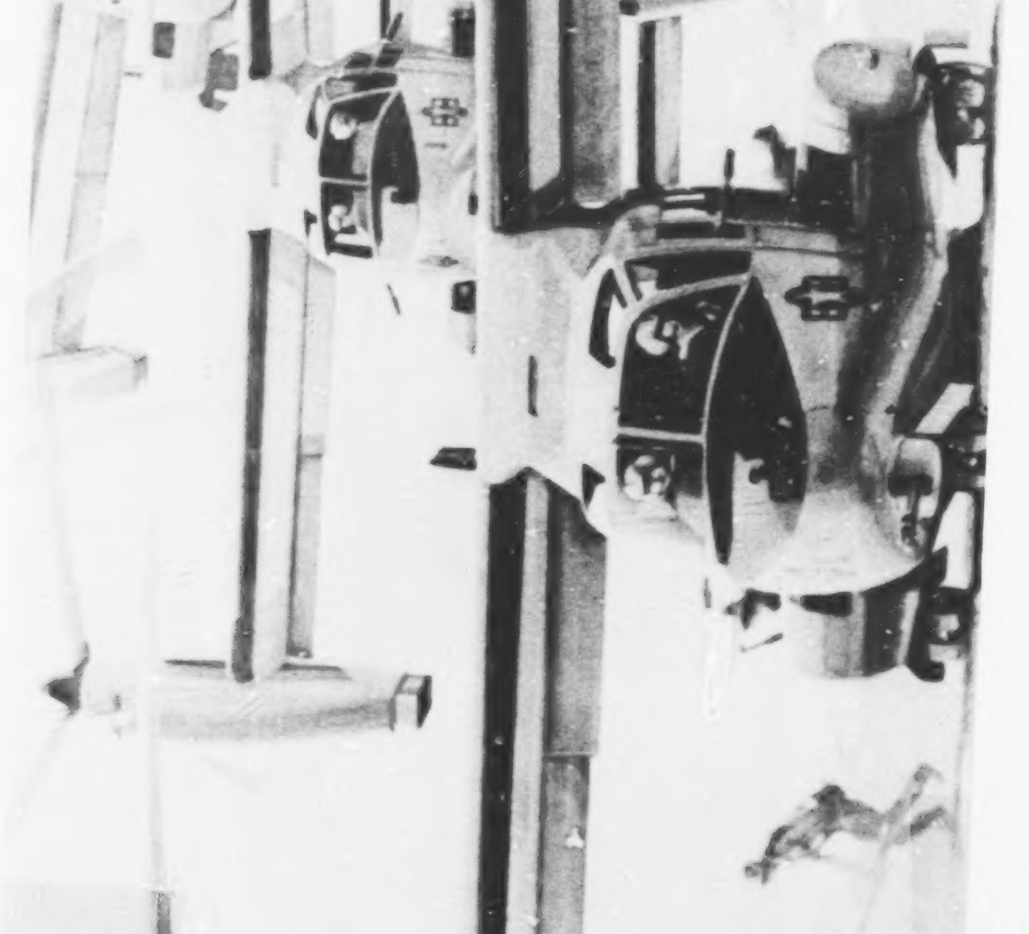
Mission weight:	50,000 pounds
Speed:	158 knots
Troops:	33
Payload:	22,703 pounds at sea level, standard day 15,873 pounds at 4,000 feet, 95 degrees fahrenheit

SOVIET COUNTERPART:

The Soviets have one helicopter in the medium-lift category; including the upgraded "HIP." It is not considered equal in performance or efficiency to the improved Chinook.

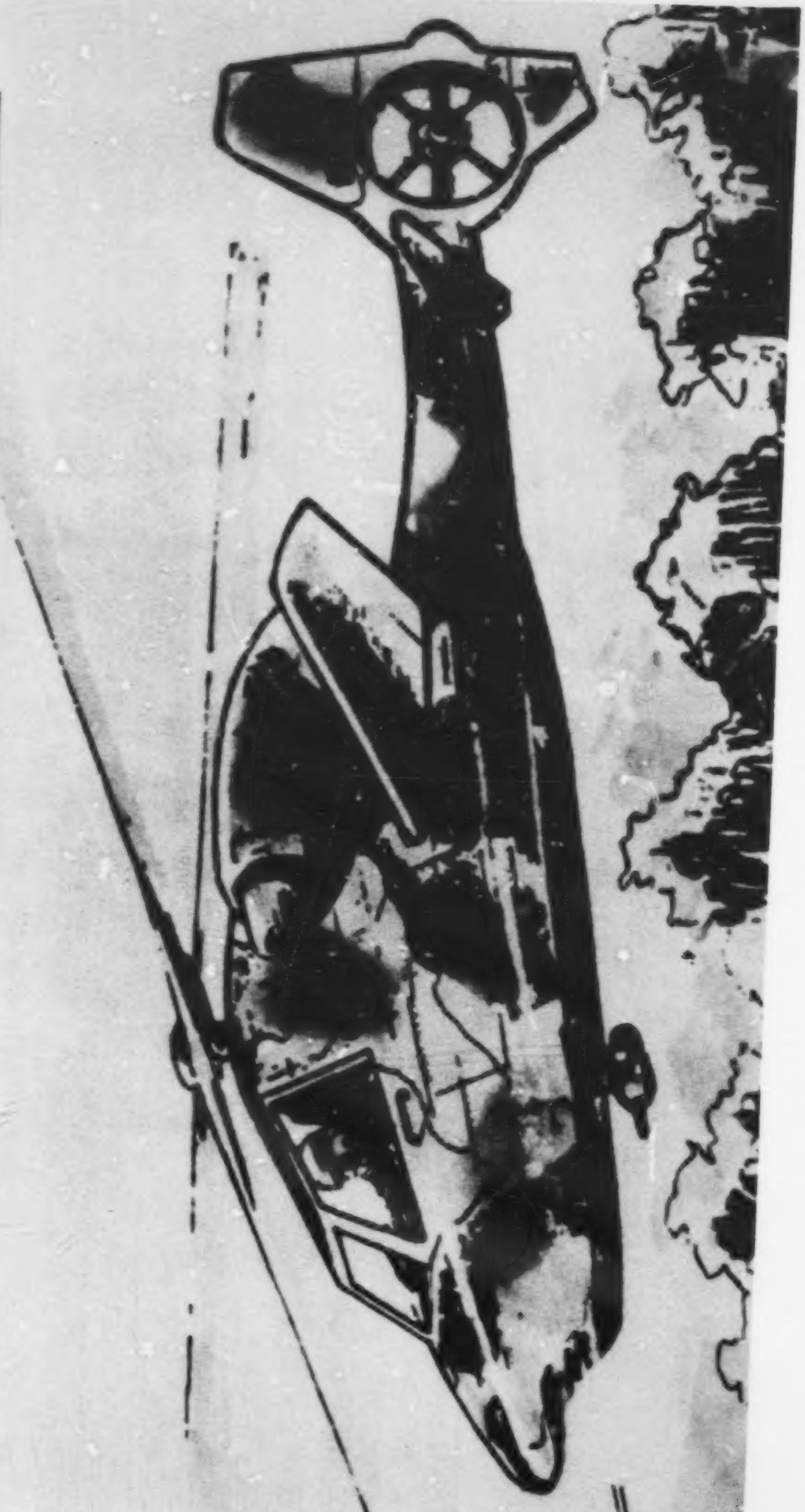
PROGRAM STATUS:

The program is in the sixth year of production. Four hundred thirty-six CH-47A, B, and C model aircraft will be modernized to the "D" configuration.



V-22 AIRCRAFT
(1st ACFT in 1993)

MISSION:	The V-22 is a multipurpose, multiservice tilt-rotor aircraft that will be fielded in the Army in the early 1990s. The V-22 will perform a variety of combat, combat support, and combat service support missions in the deep, main, and rear battle areas. Typical missions will be unit repositioning, resupply, special operations, and med evac.	
CHARACTERISTICS:	Empty weight:	27–29,000 pounds
	Max VTOL weight:	41–45,000 pounds
	Max STOL weight:	54–56,000 pounds
	Cruise speed:	220–250 knots
	Max speed:	275–300 knots
	Range VTOL:	1,400 NM
	Range STOL:	2,100 NM
SOVIET COUNTERPART:	The Soviets are believed working on a tilt-rotor aircraft. Deployment could take place in the early 1990s.	
PROGRAM STATUS:	V-22 is currently in full-scale development with an anticipated US Marine Corps initial operational capability in FY 1991. The initial Army production of eight aircraft will begin in FY 1991 with deliveries in FY 1993. The current Army requirement is for 231 aircraft.	



ARTIST'S CONCEPT

LHX (LIGHT HELICOPTER FAMILY)

MISSION: The Light Helicopter (LHX) family will be the Army's next-generation rotorcraft and will be designed to meet the requirements of the AirLand Battle and Army 21. The current Army fleet of Vietnam vintage AH-1, UH-1, OH-58, and OH-6 helicopters, nearly 30 years old by the midnineties, is becoming increasingly expensive to maintain and is not capable of fully performing its required mission in many parts of the world today. The LHX will be a lightweight (8,000 +/- 500 pounds) highly reliable and easily maintained weapon system that will achieve a high degree of standardization and reduced support costs. It will be developed around two basic configurations, a scout/attack version (SCAT) and a utility. Both models will share common engine and dynamic components as well as a fully integrated/automated cockpit arrangement. Technology maturing in the 1980s will be the cornerstone of the LHX design.

CHARACTERISTICS:

Weight:	8,000 pounds (+/- 500 pounds) (SCAT Version)
Speed:	180 + knots
Endurance:	2.5—3 hours
Crew:	Single pilot (goal)
Armament:	4 Hellfire missiles, 2 Stinger missiles, and a gun provision (primary mission gun)

SOVIET COUNTERPART: None, although both the Soviets and Poles are believed to be working on a new Light Helicopter.

PROGRAM STATUS: LHX is currently in validation/demonstration proceeding toward a Milestone I/II decision. Full-scale development for LHX began in 1987 and the system will be introduced into the field in the early 1990s. The T-800 engine development began in July 1985.

BLACK HAWK (UH-60A)

MISSION:

The Black Hawk is replacing the UH-1 "Huey" in air assault, air cavalry, and aeromedical evacuation missions. The UH-60A, Black Hawk, can carry more than twice the UH-1 payload and is capable of transporting an entire 11-member, fully equipped squad faster and in most weather conditions. The Black Hawk is the first utility helicopter that adds to the Army's division-level mobility; for example, it can reposition a 105-mm howitzer, its crew of six, and up to 30 rounds of ammunition in a single lift. Its critical components and systems are armored or redundant to enable it to withstand multiple small arms hits, and its airframe is designed to progressively deform on impact to protect the crew in a crash. Application of advanced technology in the Black Hawk systems makes it easier to maintain in the field than any other helicopter in the world. Black Hawk's full-squad carrying ability significantly improves the small-unit commanders' abilities to retain control of their forces under combat landing zone conditions, and permits more rapid replacement of ammunition and other combat consumables in a high-intensity war.

CHARACTERISTICS:

Mission weight:	16,425 pounds
Speed:	145 knots
Endurance:	2.3 hours
Crew:	2 pilots, 1 crew chief
Armament:	Two 7.62-mm machine guns
Payload:	2,640 pounds or 11 combat-equipped troops at 4,000 ft/95°F/max vertical climb

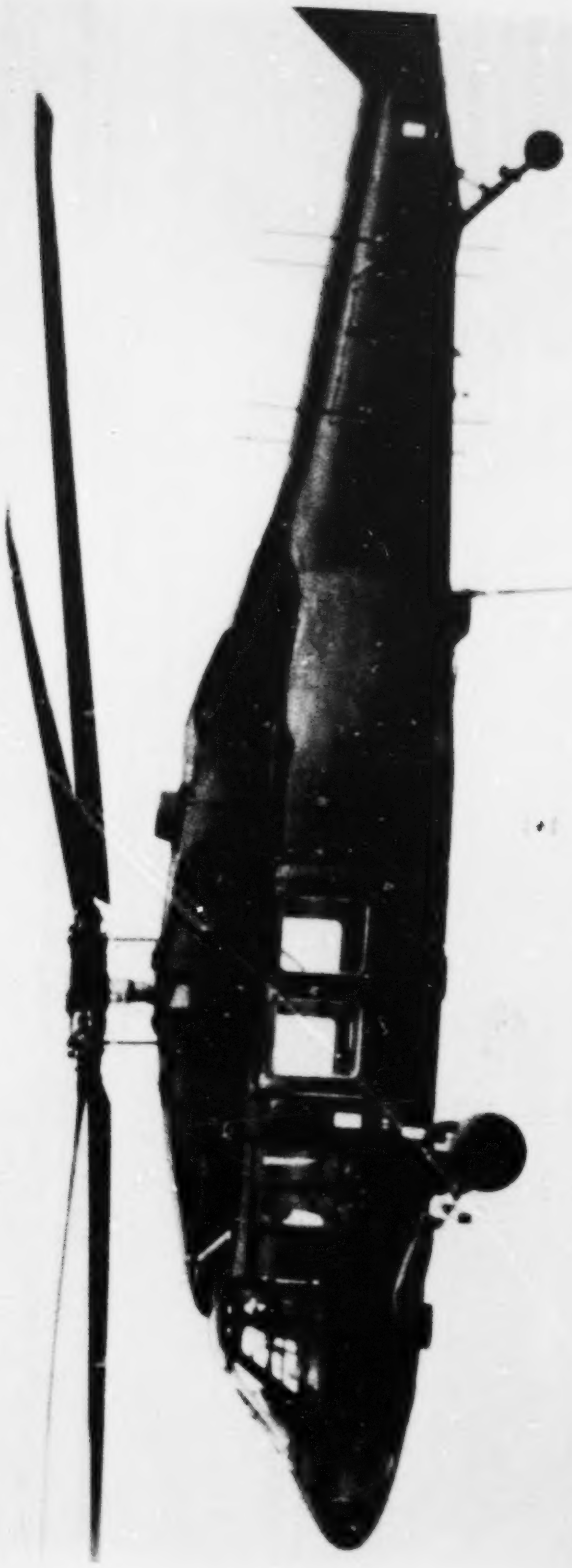
Note: Performance characteristics at primary mission weight of 16,425 pounds.

SOVIET COUNTERPART:

The HIP series, much slower and used by the Soviets as a troop carrier and general cargo transport, can carry up to 24 troops.

PROGRAM STATUS:

The Army has fielded the UH-60A Black Hawk to high-priority units in the continental United States, Europe, and Korea. The FY 1985 deliveries were fielded to Panama, US Army Western Command (WESTCOM) and US Army Forces Command (FORSCOM). The FY 1986 deliveries were to US Army Forces Command (FORSCOM), US Army Training and Doctrine Command (TRADOC), US Army Europe (USAREUR), US Army Japan (USARJ), and to Reserve and National Guard units.



QUICK FIX (EH-60A)

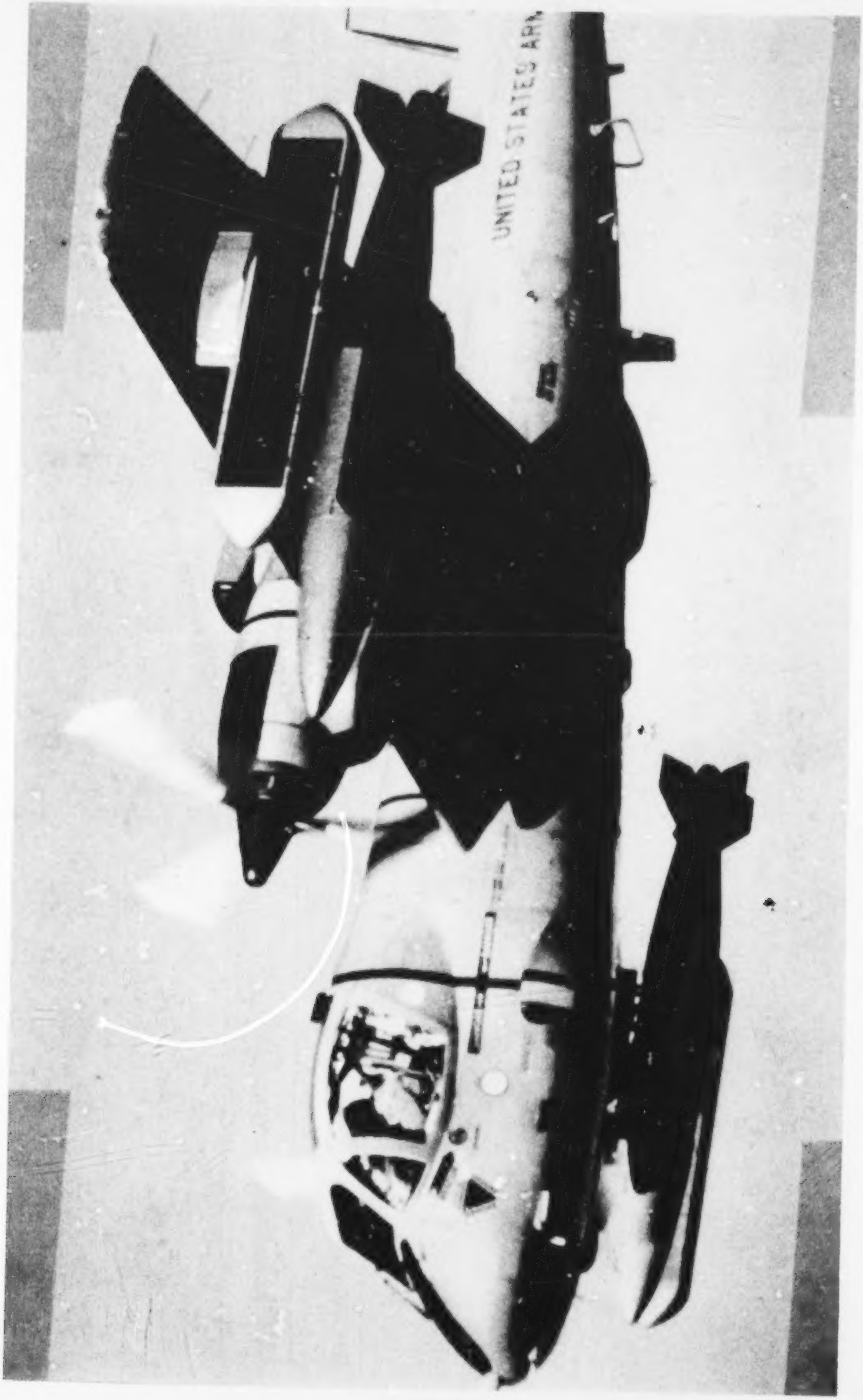
MISSION: Quick Fix is a tactical, electronic warfare, heliborne jamming system configured in the EH-1H, EH-1X, and EH-60A helicopters. Each aircraft has the capability to intercept and jam radio communications, and the EH-1X and EH-60 versions can also locate (direction finding) communication transmitters. Quick Fix aircraft will be organic to the division, separate brigade, and armored cavalry regiment.

CHARACTERISTICS:

	EH-1H	*EH-1X*	*EH-60A*
Mission gross weight (lbs):	8,800	9,200	16,500
Time on station (hrs):	1.7	1.5	4.8

SOVIET COUNTERPART: The Soviets have fielded a family of dedicated electronic warfare helicopters using at least two variants of the MI-8 and MI-17 helicopters.

PROGRAM STATUS: Several interim EH-1H Quick Fix systems are currently fielded; the interim EH-1X system is in production, and the EH-60A, Quick Fix, is in development.


UNITED STATES ARM

OV-1D (MOHAWK) SURVEILLANCE SYSTEM
(Aerial exploitation combat battalion, electronic warfare and intelligence brigade)

MISSION:

The OV-1D, Mohawk, is a two place, twin turbo-prop, combat aircraft equipped with side-looking, airborne radar, photographic or infrared sensors capable of monitoring enemy operations in daylight, darkness, and inclement weather. The primary sensor is the AN/UPD-7 airborne radar surveillance system. When used in conjunction with a data link, the radar information is transmitted to a ground-based receiving system that has the capability to convert the received signals back to film for near real-time viewing analysis. An electronic counter-countermeasure capability is incorporated.

CHARACTERISTICS:

Mission weight:	18,384 pounds
Infrared system:	AN/AAS-24
Camera system:	KA-60/76
Side looking airborne radar:	AN/APS-94F
Endurance:	3.0 hours
Crew:	2

PROGRAM STATUS:

The OV-1D is currently deployed in military intelligence battalions (aerial exploitation); two OCONUS, two FORSCOM, and one National Guard. The current program funds a service life extension program, an avionics upgrade, and two safety related product improvements. This will result in a significant increase in readiness and mission capability and ensure continuous intelligence to the tactical commander.

IMPROVED GUARDRAIL V (RC-12D)
(Corps aerial exploitation battalion, combat electronic warfare and intelligence brigade)

MISSION: Improved Guardrail V, a combined airborne and ground communications intelligence system, is designed to intercept and locate enemy communications emitters. The system provides timely and accurate data on enemy locations and plans and will enable commanders to concentrate their combat resources at the critical time and place. The Guardrail V system uses the RU-21H aircraft; the Improved Guardrail V system uses the RC-12 aircraft; and, future plans will result in the fielding of a Guardrail common sensor system that will use the RC-12K airframe.

CHARACTERISTICS:

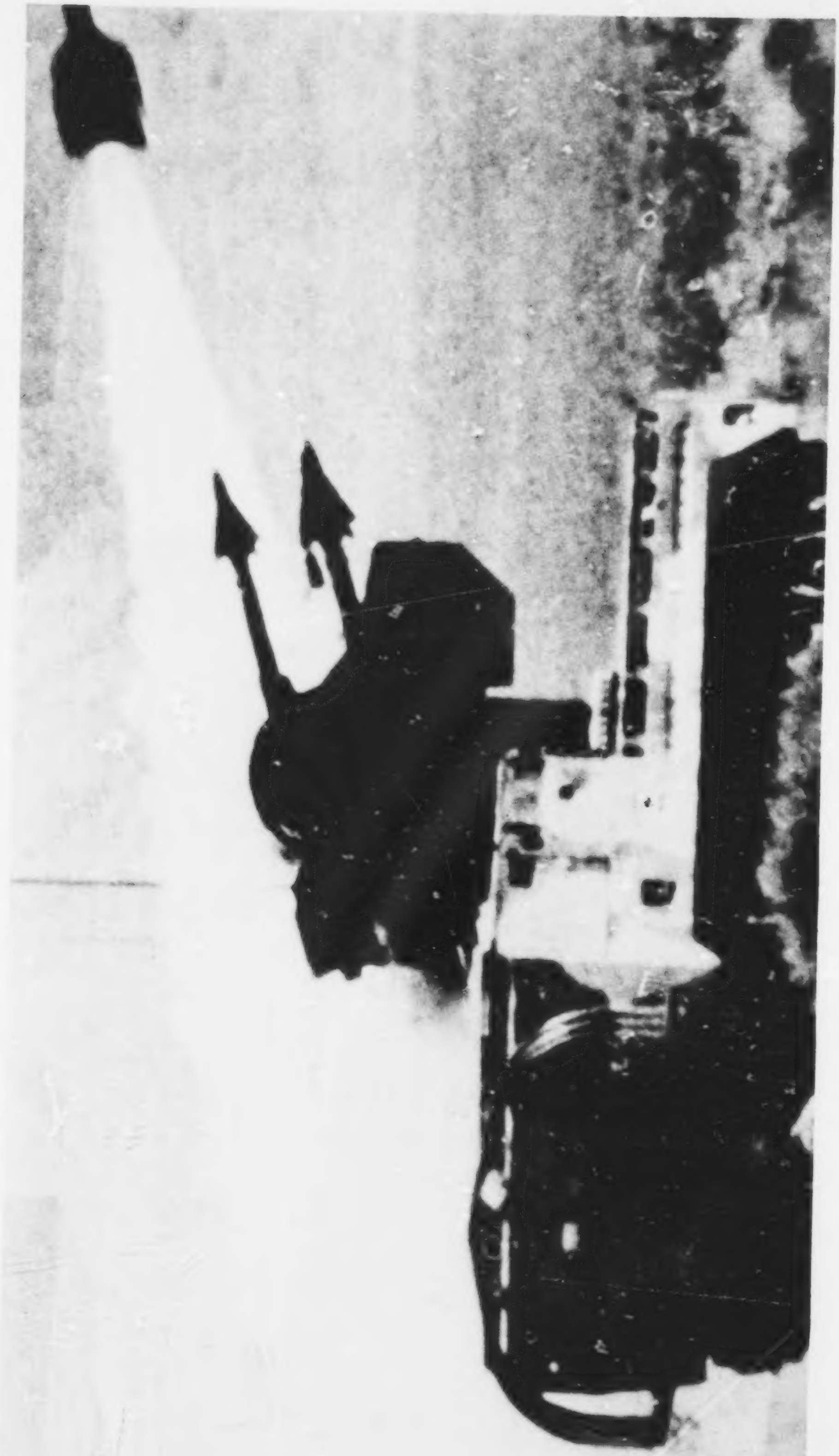
	RU-21H	*RC-12D*	*RC-12K*
Mission weight (lbs):	10,200	14,000	15,600
Pressurization:	No	Yes	Yes
Service ceiling (ft):	18,000	25,000	25,000
Endurance (hrs):	4	5(+)	5(+)
Crew:	2	2	2

SOVIET COUNTERPART: The Soviets have a wide variety of airborne and ground-mounted electronic warfare systems. There is no known Soviet system comparable to Guardrail, although the AN-12 CUB C performs similar missions.

PROGRAM STATUS: The currently deployed Guardrail V system's airborne equipment is mounted on RU-21H aircraft and will continue to be used. Contractual work for the Improved Guardrail V system, to mount the airborne equipment in RC-12D aircraft and to increase system performance and interoperability, was started in 1981, and the first two systems have been fielded.

STINGER
(Air defense battalions—all divisions)

MISSION:	Stinger is a shoulder-fired, infrared homing missile system whose mission is to provide air defense coverage to even the smallest of combat units. The missile homes on the heat emitted by either jet or propeller-driven fixed-wing aircraft or helicopters, and employs a proportional navigation system that allows it to fly an intercept course to the target. A Stinger crew visually acquires its target and electronically interrogates it to determine if it is a friend. The missile notifies the gunner when it has a "lock" on the target. It is then fired from the tube by a small launch motor. Once the missile has traveled a safe distance from the gunner, its main engine ignites and propels it to the target. Stinger is stored in a sealed tube, requires no maintenance in the field, and is designed to withstand the rigors of the battlefield. It is replacing the Redeye system. It can attack much faster targets than Redeye, and most important, can destroy aircraft from any angle. A follow-on seeker (Stinger-POST) improves the capability of the system in certain infrared countermeasures environments. Stinger-Reprogramable Microprocessor (RMP) further enhances the performance in infrared countermeasures environments and provides the capability to make future changes as the threat evolves through a replaceable software mode.
SOVIET COUNTERPART:	Soviet manportable air defense systems are the SA-7, comparable to the US Redeye, and the SA-14. The SA-7 has a range and altitude capability of approximately three kilometers and only a tail-chase capability. The SA-7 was used extensively in Vietnam and the Middle East and is deployed with the maneuver units throughout the Warsaw Pact. The SA-14, fielded in the late 1970s, has similar performance characteristics to the Stinger. The SA-14 is replacing the SA-7.
PROGRAM STATUS:	Stinger is in production and was operationally deployed to West Germany in 1981 and to the 82nd Airborne Division in 1982. Stinger-POST entered production in FY 1983. These missiles are scheduled to be deployed in FY 1987. Stinger-RMP entered development in September 1984. Missiles delivered beginning in July 1987 will be RMP configured.



CHAPARRAL (M67)
(Air defense battalions—mech infantry, armored divisions)

MISSION:

Chaparral is the Army's short-range air defense (SHORAD) surface-to-air missile system. It is effective against all types of aircraft at low altitudes and provides protection for forward deployed divisions and corps and theater rear areas. Chaparral is a self-contained, self-propelled system. Its tracked carrier provides excellent cross-country mobility. The launch station is self-contained and can be removed from the carrier and be ground emplaced. The missile is lightweight, supersonic, fire-and-forget, with an all aspect passive infrared homing guidance system capable of engaging both approaching and receding targets. To reduce rocket motor smoke, a smokeless motor has been developed and is being retrofitted to inventory missiles upon shelf-life expiration of the current "smoky" motors. To assist the gunner in identifying targets as friendly, Chaparral has an identification, friend-or-foe (IFF) subsystem. Chaparral carries four ready missiles on launch rails and eight additional missiles in storage compartments. Chaparral was initially fielded in 1969 and will remain in the inventory through the 1990s.

CHARACTERISTICS:

Crew:	5
Guidance:	Infrared homing, fire and forget
Warhead:	Blast-fragmentation
Fuze:	RF directional doppler

SOVIET COUNTERPART:

The SA-9 and SA-13, introduced in late 1960s and 1970s respectively, are the counterparts to Chaparral. They have approximately the same range and also use an infrared homing guidance system. The SA-9 and SA-13 provide regimental-level air defense; there are 16 weapon systems per division (4 per regiment) with four missiles per vehicle. The SA-9 is mounted on a two-axle amphibious vehicle; the SA-13 is on an MTLB tracked vehicle.

PROGRAM STATUS:

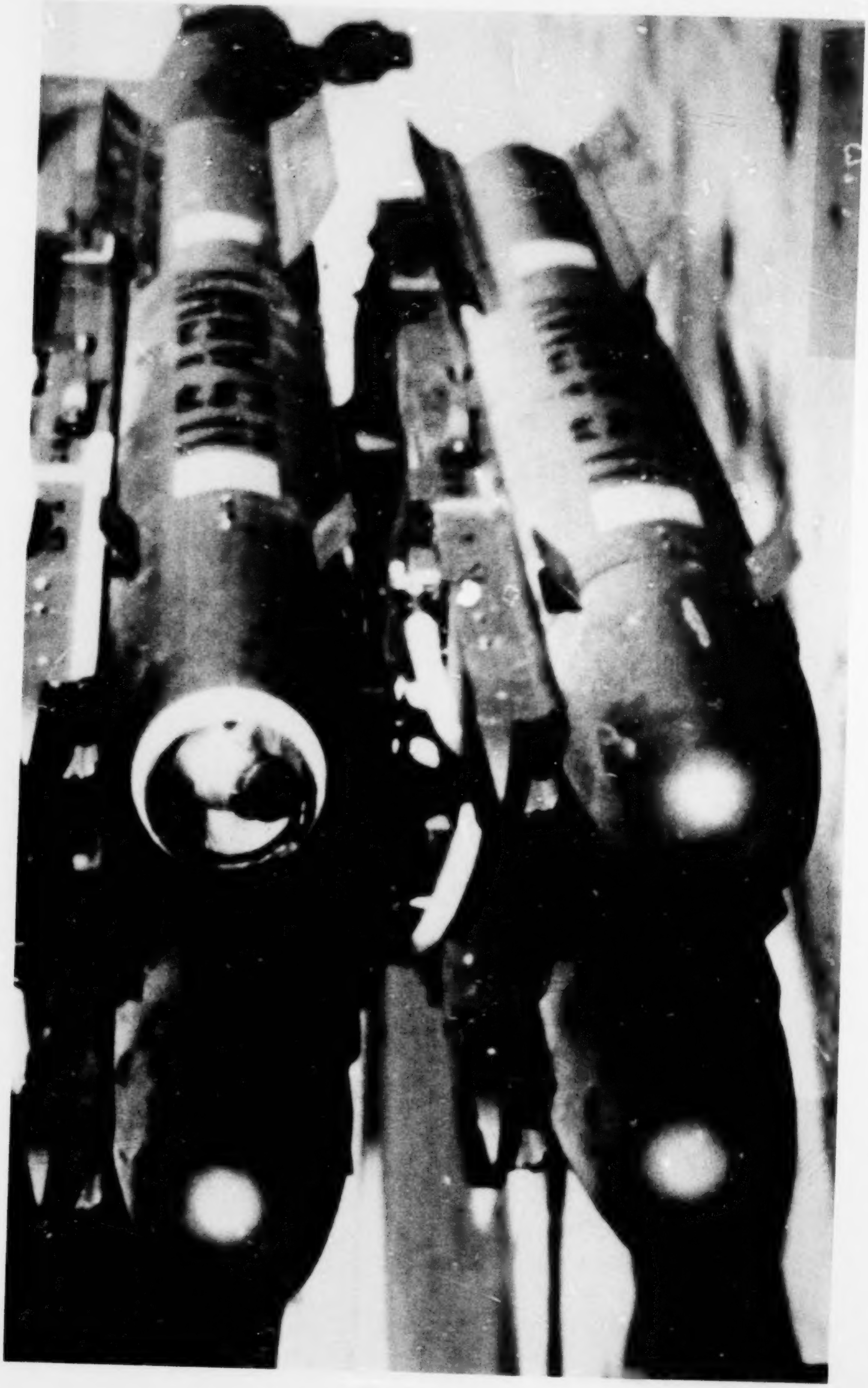
To keep Chaparral current, several improvements are programmed. It is presently constrained to clear-day operations because targets are visually acquired. A forward-looking infrared (FLIR) night sight—a target acquisition device—has been developed and entered production in FY 1982. The FLIR provides the gunner day, night and some adverse weather target acquisition capability. Development was initiated in FY 1982 to provide Chaparral with an improved missile guidance system to provide enhanced capability against infrared countermeasures. The improved missile, which will incorporate a rosette scan seeker (RSS), will significantly improve target acquisition and engagement range capability. Chaparral was provided to the New Mexico Army National Guard beginning in FY 1984. A towed version of Chaparral has been developed for the light forces.

HAWK
(Air defense battalion—corps air defense brigade)

MISSION:	Hawk is a medium-range air defense guided missile system designed to provide air defense coverage against low-to-medium altitude air attack. In the field since 1960, it is a mobile all-weather, day-and-night missile system providing vital air defense against enemy air attack. Hawk has superior fire control, lethality, range, reliability, and effectiveness in an electronic countermeasures environment. In the basic Hawk configuration, over a score of high-performance aircraft were destroyed in the Middle East War of 1973. Currently, Hawk is being reorganized into a more streamlined and efficient fighting organization. Each platoon contains a platoon command post that controls the platoon's equipment and fights the airbattle; an acquisition and a tracking radar; an optical tracking system; an IFF (identification, friend or foe) system; and three to four launchers containing 9 to 12 ready missiles. The Hawk missile carries a large proximity fusing, high-explosive warhead that needs only to pass near the target to destroy it.
SOVIET COUNTERPART:	The Soviet SA-6 is somewhat similar to Hawk. Its range and altitude capabilities (30 km and 10 km, respectively) are less than that of the Hawk, but the SA-6 is more mobile. The basic SA-6 unit is a regiment that includes five missile firing batteries. Principal components of a missile battery include a target acquisition and fire control radar called "Straight Flush" and four transportation erector launchers (TELs). Each TEL carries three ready-to-fire missiles.
PROGRAM STATUS:	Hawk received its first major product improvement in FY 1973 and is deployed worldwide with the Army, Marines, NATO, and numerous other friendly nations. Hawk modernization is continuing through a series of product improvements that enhance firepower, readiness, serviceability, and combat proficiency against the projected threat.

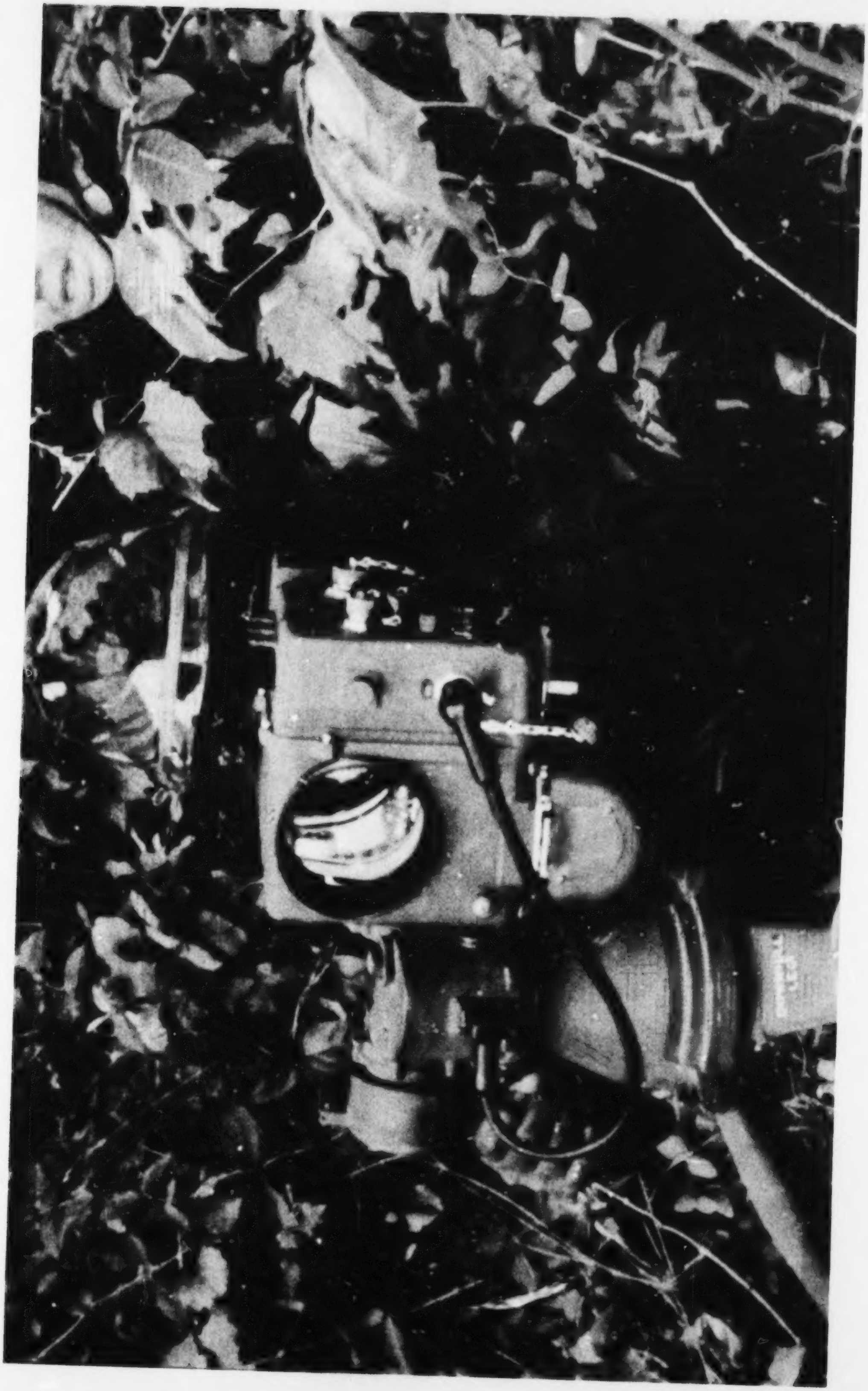
PATRIOT

MISSION:	Patriot, the Army's new all-altitude missile system, will be the centerpiece of theater air defense. The system's fast-reaction capability, high firepower, and ability to operate in a severe electronic countermeasure environment are features not previously available in Nike Hercules and Hawk, the systems Patriot will replace. The Patriot design eases the field logistic burden since its overall performance is achieved with less equipment, less operational manpower, and fewer repair parts than current systems. The combat element of the system is the fire unit that consists of a radar set, an engagement control station, a power plant, and up to eight remotely located launchers. The system is highly automated combining high-speed digital processing with various software routines to effectively control the battlespace. The single radar, using phased array technology, provides for all tactical functions of airspace surveillance, target detection and track, and support of missile guidance. The only manned element of the fire unit during an air battle, the engagement control station, provides the human interface for control of automated operations. Each launcher contains four ready-to-fire missiles, sealed in canisters, that serve a dual purpose as shipping containers and launch tubes.
CHARACTERISTICS:	Guidance: Track-via-missile Engagement: Multiple target simultaneously
SOVIET COUNTERPART:	The Soviets have several missile systems, including the SA-1, SA-2, SA-4, SA-5, and SA-10 that are used to attack aircraft in the regime for which Patriot was designed. Only the SA-10 is considered as advanced or effective as Patriot, but the SA-X-12 (the SA-4 replacement) will soon add another Patriot counterpart system.
PROGRAM STATUS:	Patriot was initially deployed to Europe in 1985. Two battalions are currently operational with four additional battalions scheduled to join our forces during the next two years. The Army is currently working with several NATO nations and Japan on Patriot acquisition programs to provide for cooperative air defense improvements. The first NATO unit was delivered in 1986.



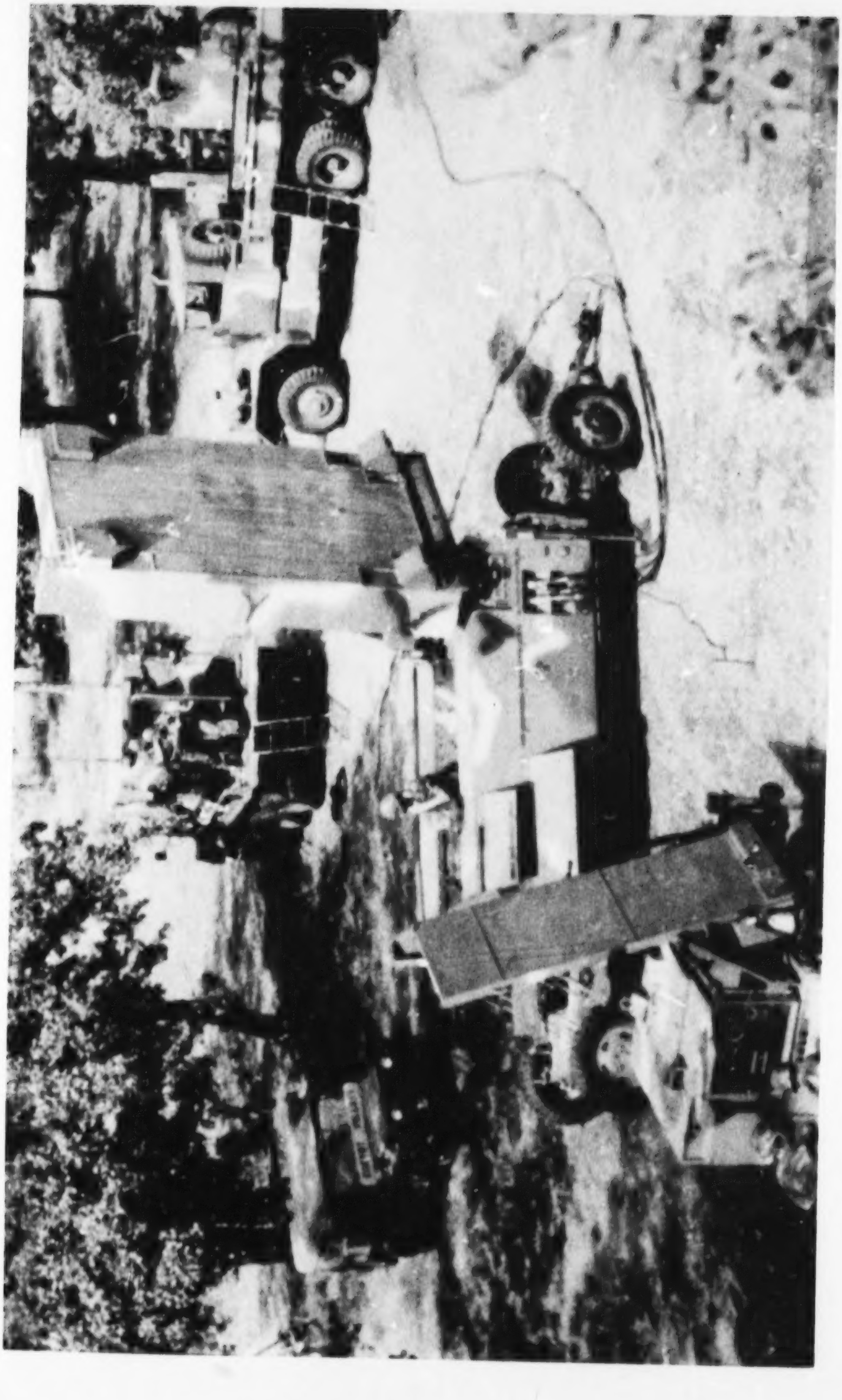
HELLFIRE MODULAR MISSILE SYSTEM

MISSION:	Hellfire is a third-generation airborne antiarmor weapon. It is presently intended for use as the main armament of the Apache helicopter. Hellfire homes on laser energy projected from ground observers, other aircraft or the launching aircraft itself. This enables the Apache AH-64 to launch its missiles indirectly, in some situations without seeing its target. The Apache AH-64 can carry up to 16 Hellfire missiles. Uses on other Army and US Marine Corps aircraft are also under consideration for Hellfire. Hellfire provides improvement over TOW: (1) greater lethality, (2) increased firing rates, (3) greater standoff range, (4) greater versatility, and (5) less time of flight.
CHARACTERISTICS:	Diameter: 7 inches Weight: 99 pounds Guidance: Laser semiactive
SOVIET COUNTERPART:	The Soviets have a wide variety of antiarmor missiles of varying accuracy and lethality. No accurate comparison is yet possible between Hellfire and a possible Soviet laser homing antitank weapon.
PROGRAM STATUS:	Hellfire has entered full production and was fielded with the Apache in 1986.



GROUND/VEHICLE LASER LOCATOR DESIGNATOR (G/VLLD) ("GLID")
(Artillery battalions—all divisions)

MISSION:	G/VLLD is a precision fire support tool used to find the range, azimuth, and elevation to enemy targets to minimize the time required to bring conventional artillery fire-for-effect on the target and save ammunition in the process. The G/VLLD can also project an invisible, coded, laser spot on selected targets so that such laser homing munitions as Copperhead, Hellfire, and the US Marine Corps Laser Maverick can home in on laser spot. G/VLLD will be employed by forward artillery observers from vehicles (such as firesupport team vehicles [FISTV], bunkers, or foxholes). After using G/VLLD to locate the target, the forward observer provides the target coordinates and other data to the fire direction center. If laser homing munitions are to be used, the operator switches on the laser designator before the round/missile is due to strike. The homing munition, as it nears the target, "looks for" the laser spot, and after locating it on the target, flies into it. The G/VLLD can then be slewed to the next target, enabling the forward observer to engage several targets in rapid succession.	
CHARACTERISTICS:	Weight: Rangefinder range:	52 pounds 10 kilometers
SOVIET COUNTERPART:	The Soviets are known to be working with low-energy lasers for munitions guidance.	
PROGRAM STATUS:	G/VLLD was initially fielded in the 4th quarter, FY 1982. It is currently in full-scale production.	



FIREFINDER RADARS (ARTILLERY LOCATING RADAR [AN/TPQ-37] AND MORTAR LOCATING RADAR [AN/TPQ-36])

(Target acquisition battery, DIVARTY, mech and armored divisions)

MISSION:	Firefinder Radars enable friendly forces to locate and bring immediate fire upon enemy mortar, artillery, and rocket-launching positions, silencing them before they can adjust their fires on friendly units and positions. The world's first automatic hostile-weapon-locating systems, Firefinder radars use advanced phased array antenna techniques complete with computer-controlled signal processing. They function by spotting enemy projectiles in flight and mathematically backplotting their trajectory. The position of the weapon is reported in grid coordinates that can be fed automatically into artillery fire direction center, enabling them to target the enemy weapons with guns, rockets, or other ordnance. In tests, both radars, in combination with fire control devices, enabled an artillery unit to have accurate counterfire on the way before the first enemy projectile struck the ground. In actual combat action in Lebanon (1984), the AN/TPQ-36 performed equal to or better than the test results. Each Army division is being equipped with two artillery locating radars and three mortar locating radars.
SOVIET COUNTERPART:	The closest Soviet counterpart to Firefinder radars is the Small Yawn, a system with significantly less capability.
PROGRAM STATUS:	Research and development was completed in FY 1980. The AN/TPQ-37 initial operational capability was achieved in December 1980 when two radars were deployed to the 1st Cavalry Division Artillery at Fort Hood, Texas. The AN/TPQ-36 initial operational capability was completed in February 1983 with the hand off of three radars to the 1st Armored Division in US Army Europe (USAREUR).

M119 105-MM HOWITZER
(DIVARTY—light divisions)

MISSION:

The M119 is a nondevelopmental 105-mm light howitzer from the United Kingdom. It will replace the M102 and the M101A1 howitzers in the Army's inventory. The M119 will provide fire support for the six light infantry divisions and other rapid deployment forces. This weapon affords the commander the improved range and performance needed to maintain maneuverability and quick strike capability. It will fire all of the conventional 105-mm ammunition in the inventory plus several new enhanced capability rounds now under development. It is air mobile with the UH-60 helicopter and its prime mover will be the high mobility multipurpose wheeled vehicle (HMMWV).

CHARACTERISTICS:

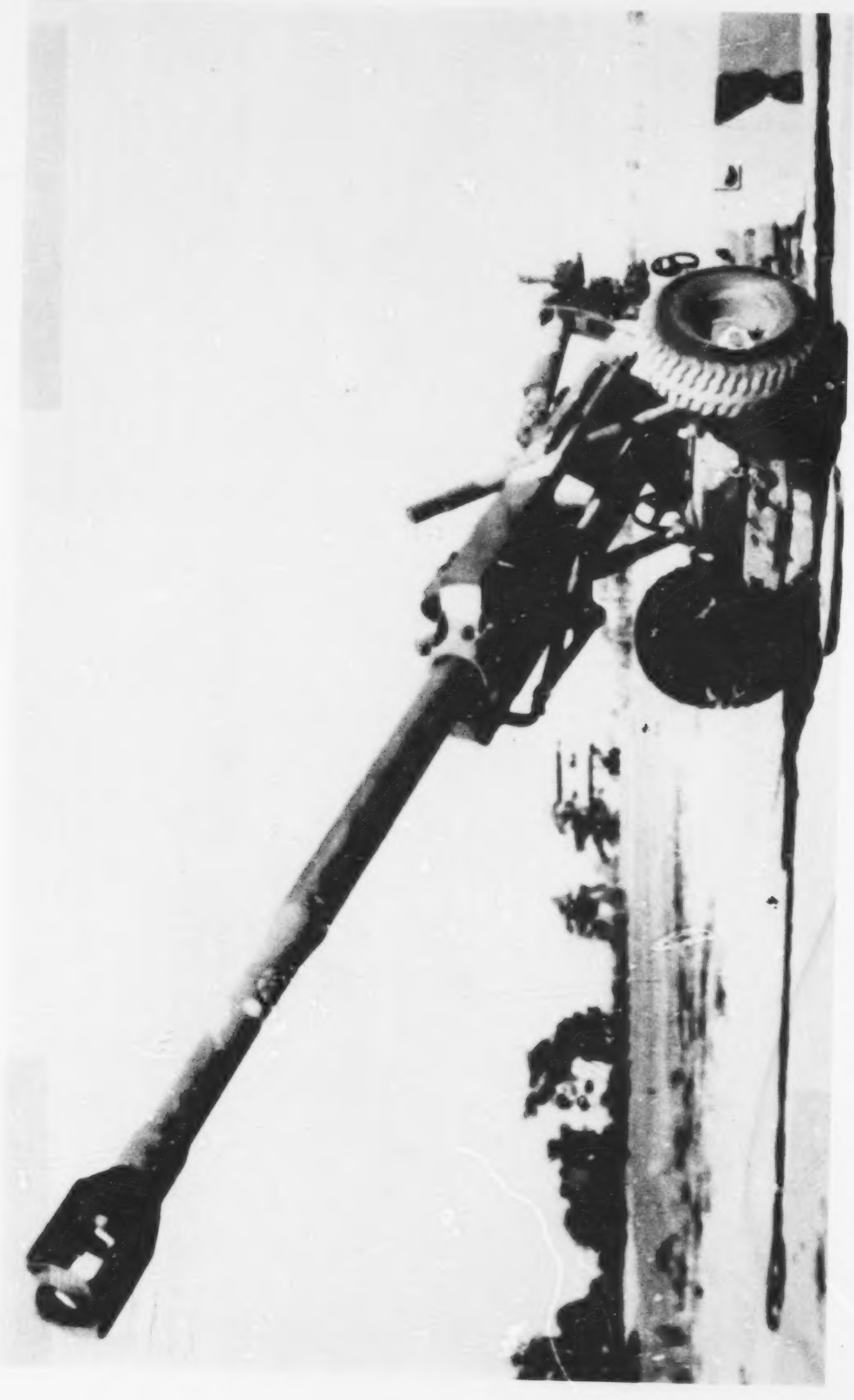
Range (kilometers):	16.8 DPICM, 14.3 high explosive (HE) 9.5 rocket assisted projectile (RAP)
Weight:	4,000 pounds
Width:	5 feet, 10 inches
Length:	20 feet, 1 ½ inch
Height:	7 feet, 3 inches
Maximum elevation:	1,245 mils
Minimum elevation:	-100 mils
Traverse on platform:	6,400 mils
Crew:	7
Ammunition:	HE, smoke, illumination, RAP, dual-purpose incendiary chemical munition (DPICM)

SOVIET COUNTERPART:

The nearest Soviet counterpart is the D-30 122-mm howitzer. It is fielded in the Soviet and Warsaw Pact armies and has had extensive Foreign Military Sales dealings. Its range is 15.4 kilometers, it weighs 7,000 pounds, and requires a crew of seven.

PROGRAM STATUS:

The M119 has been type classified and the weapon will be coproduced by both the United Kingdom and a US producer.



M198 155-MM MEDIUM TOWED HOWITZER
(DIVARTY, infantry division and corps artillery, XVIII airborne corps)

MISSION:

The M198 is being employed in the active Army and Reserve components in the direct support field artillery battalions of the infantry divisions and separate brigades and in corps battalions supporting the airborne and air assault divisions. It is also being employed by the US Marines in their divisions. It replaces the World War II-vintage 155-mm towed howitzer. The M198 provides major increases in range and reliability over its predecessor howitzers. It may be parachute delivered or carried by a variety of cargo aircraft or medium helicopters.

CHARACTERISTICS:

Range:	30.5 kilometers with rocket-assisted projectiles 18.1 kilometers unassisted
Weight:	15,750 pounds
Length:	40.3 feet (towed configuration)
Height:	9.5 feet (towed configuration)
Width:	8.3 feet
Crew:	11
Ammunition:	Standard 155-mm ammunition, nuclear ammunition, and the new family of 155-mm, ammunition (cannon-launched, guided projectiles, scatterable mines and improved munitions).

SOVIET COUNTERPART:

The Soviet towed D20, 152-mm howitzer is the rough equivalent of the M198 in most performance characteristics. It is considered an excellent and reliable weapon.

PROGRAM STATUS:

The M198 had its last funded procurement in FY 1982. There was no procurement in FY 1984 through FY 1986; however, procurement is planned in FY 1987 through FY 1989.

M109A2/A3 SELF-PROPELLED HOWITZER/HOWITZER IMPROVEMENT
(DIVARTY—mech infantry and armored divisions)

MISSION:

The M109A2 is an improved version of the M109 self-propelled howitzer that was fielded in the early 1960s. The M109A3 is a depot modified M109A1 with the same performance capabilities as the production M109A2. The M109 is designed to provide the primary indirect fire support to the maneuver brigades of the armor and mechanized infantry divisions. The M109A2/A3 is air transportable in a C5 and is capable of firing both conventional and nuclear munitions. The Army, in October 1985, initiated the development of a major system modification of this fielded system. The modification includes: automotive improvements, crew nuclear, biological, chemical (NBC) protection and dual fire suppression system, driver's night-vision device, communications, ballistic computer and navigation system and built-in test equipment. These improvements will provide significant improvements in system responsiveness, survivability, and lethality.

CHARACTERISTICS:

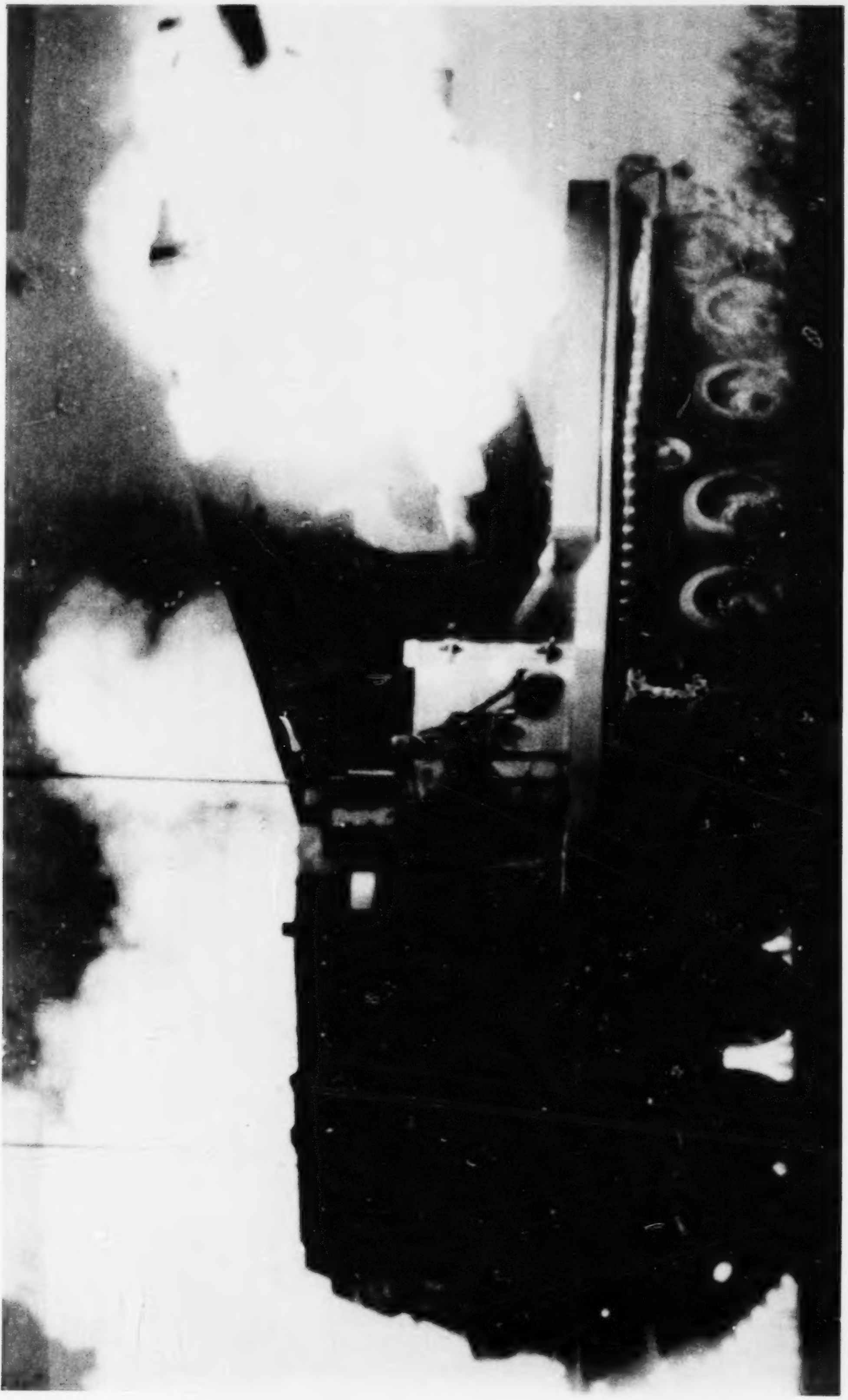
	M109A2/A3	*IMPROVED M109A2/A3*
Range:	24 kilometers w/rocket-assisted projectile 18.1 kilometers unassisted	30 kilometers or greater
Weight:	55,000 pounds (combat loaded)	Max 60,000 pounds
Length:	29.9 feet	Same
Height:	10.8 feet	Same
Width:	10.3 feet	Same
Main armament:	155-mm cannon (M185)	Improved 155-mm cannon
Secondary armament:	Machine gun cal .50 and M16A1 rifles	Same
Crew:	6 (accompanying vehicle M548/3)	Same
Cruising range:	220 miles (345 km)	TBD
Ammunition:	All ammunition except the M203 charge	All ammunitions

SOVIET COUNTERPART:

The Soviets have a modern 152-mm self-propelled howitzer designated 2S3. It is considered comparable to the M109A2 in most performance characteristics.

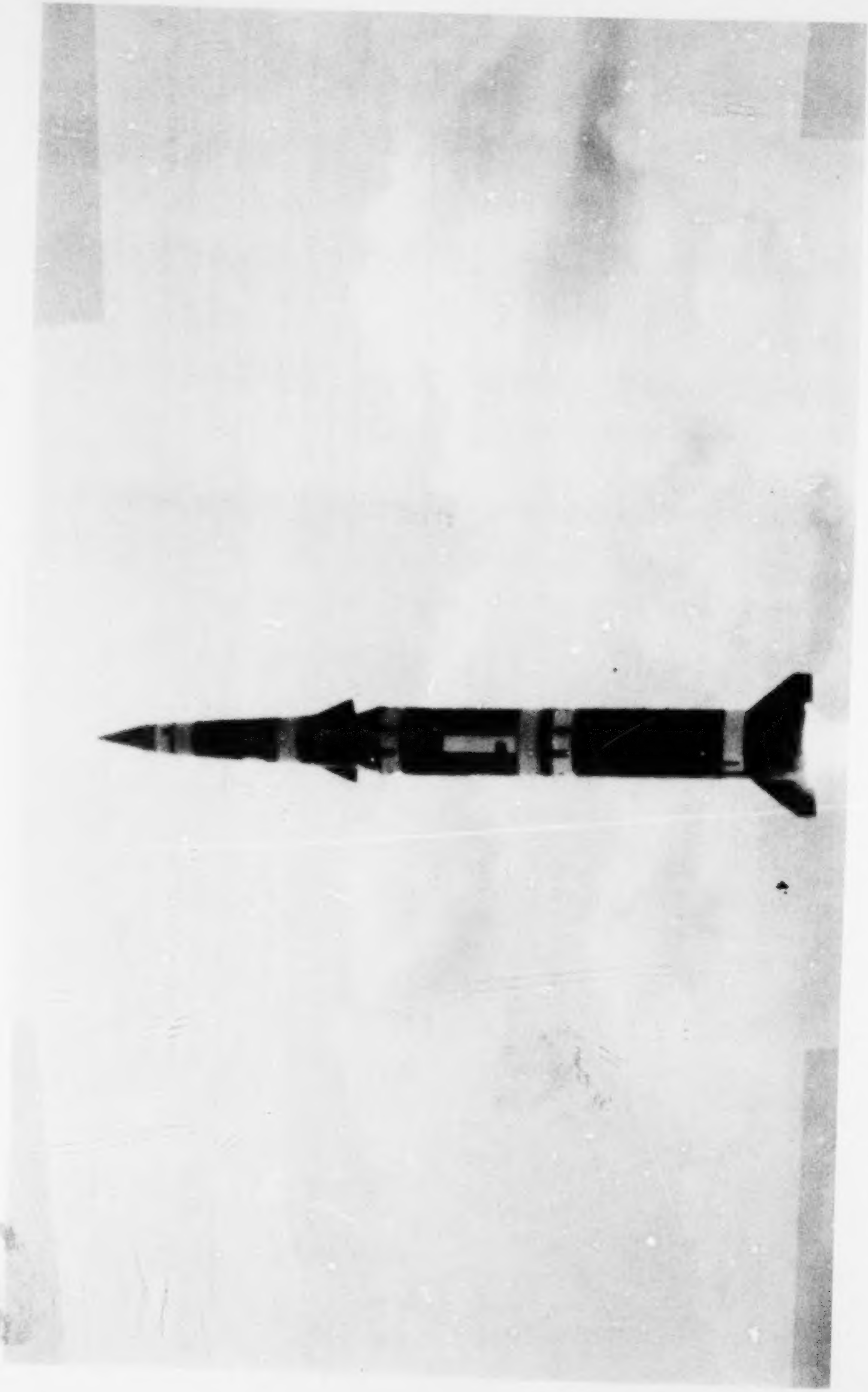
PROGRAM STATUS:

The M109A2 is in full-scale production. Final delivery was in 1987.



MULTIPLE LAUNCH ROCKET SYSTEM (MLRS)
(DIVARTY, mech infantry, and armored divisions)

MISSION:	The MLRS is a free-flight, area fire, artillery rocket system developed to fill an existing void in conventional fire support. The primary missions of MLRS are counterfire and suppression of enemy air defenses. MLRS supplements cannon artillery fires by delivering large volumes of firepower in a short time against critical, time-sensitive targets. The basic warhead carries improved conventional submunitions. West Germany, one of five partners in an international development program, is developing a scatterable mine warhead. Growth potential exists to add a terminal guidance warhead (TGW)—to defeat armor—and a binary chemical warhead. Codevelopment of TGW by the United States, United Kingdom, West Germany, and France began in fiscal year 1985. The Army Tactical Missile System, when fielded, will use the MLRS as its launch platform.
CHARACTERISTICS:	Warhead: Improved conventional munitions (ICM) Propulsion: Solid
SOVIET COUNTERPART:	The Soviets have a very effective multiple rocket capability with several sizes of rockets. The rockets themselves, however, are not believed to be as effective as the MLRS rocket. A new system, believed to be similar in employment concept and size, has been seen deployed in Europe. A Soviet MRL will not have the degree of automation or flexibility of operations of the US MLRS.
PROGRAM STATUS:	MLRS has completed its design maturation phase and is approved for full-scale production. It was developed on an accelerated schedule followed by initial fielding in March 1983. The Army awarded a multiyear contract in September 1983 for procurement of MLRS for US forces. MLRS will be coproduced by the United States, United Kingdom, West Germany, France, and Italy.



PERSHING II MISSILE SYSTEM
(Theater artillery [missile] brigade)

MISSION:	Pershing II is a modular, evolutionary improvement to the previously fielded Pershing 1A ballistic missile. It is more accurate than the P1A and provides more than twice the range (1,800 km). The accuracy improvement is achieved by a technique called *radar area correlation*. As the Pershing II reentry vehicle descends in the area of the target, it compares live radar reflection from the target area with reference scenes stored before launch. It then makes course adjustments based on the comparisons, producing almost pinpoint accuracy, and hence allowing the use of smaller nuclear warheads that produce less unwanted collateral damage. Pershing II also incorporates several other features that enhance its flexibility and decrease its operating costs. Pershing II is part of an appropriate response to the Soviet deployment of the SS-20, a system that threatens virtually all installations and cities in western Europe. The Pershing system is truck mounted, highly mobile, and rapid reacting, and as such is a survivable and powerful part of the tactical nuclear force in Europe.
CHARACTERISTICS:	Propulsion: Solid two-stage Warhead: Nuclear
SOVIET COUNTERPART:	The SS-20 is a mobile intermediate-range ballistic missile (IRBM). It is configured to carry three MIRVs and has a range of close to 5,000 kilometers. It does not, however, have the accuracy afforded by the Pershing II system radar area correlation guidance.
PROGRAM STATUS:	Pershing II is in full-scale production and began deployment in December 1983.

COPPERHEAD

MISSION:

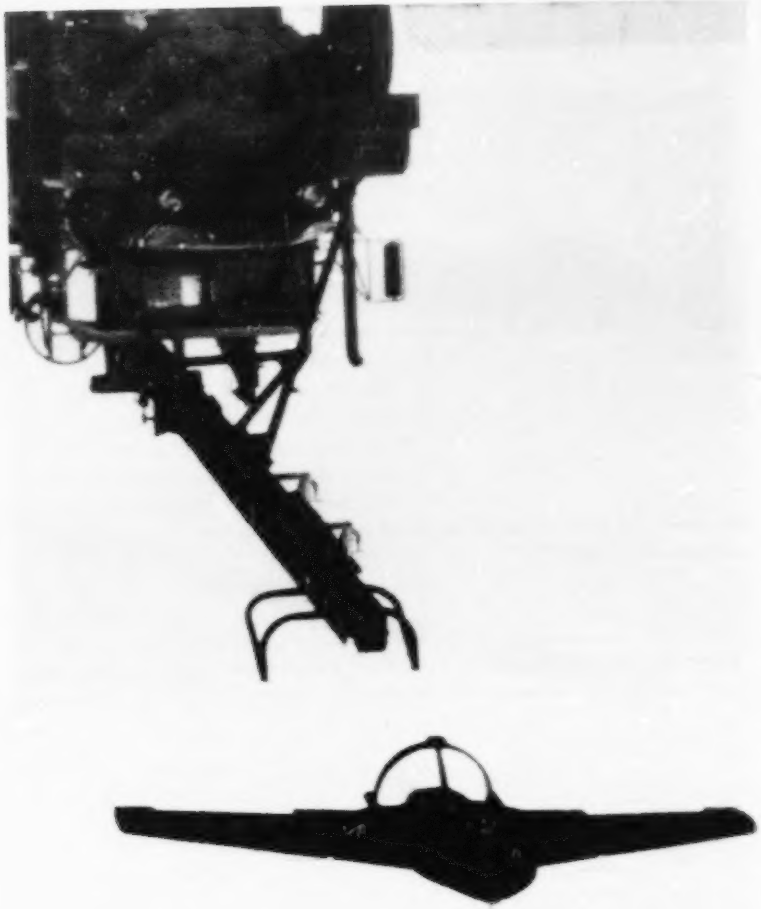
Copperhead, a cannon-launched guided projectile, is a 155-mm artillery projectile designed to destroy stationary or moving enemy tanks and other high-value targets. It can be fired from any current or planned 155-mm howitzer. When the projectile reaches the general vicinity of the target, it searches for and acquires the reflection of a laser beam projected on the target by a friendly forward observer. It then makes the necessary course corrections with its fins and homes in on the laser spot. Its accuracy is so good that it can literally drop down the open hatch of a moving tank at 16 kilometers. Copperhead is designed to complement rather than replace conventional 155-mm projectiles in artillery units.

CHARACTERISTICS:

Range:	16 kilometers
Weight:	137 pounds
Warhead:	Shaped charge fragmentation

PROGRAM STATUS:

Copperhead was initially deployed in 1981.



AQUILA REMOTELY PILOTED VEHICLE (RPV)

MISSION:	The Aquila RPV is a small propeller-driven, automatically and remotely controlled aircraft. It is intended primarily for target acquisition and field artillery support and is designed to be survivable over hostile territory. The system can perform reconnaissance, detect, identify, locate and acquire targets, adjust artillery fire, laser-designate targets for destruction by laser-guided munitions, and perform damage assessment. The Aquila is rail-launched from a flatbed truck, and upon completion of its mission, will be recovered and reused. Initially, the air vehicle will carry a small TV and will subsequently be provided with a forward-looking infrared (FLIR) sensor that will give the system a 24-hour capability. The signals from these devices are transmitted back to a mobile ground control and processing station by a jam-resistant data link. The Aquila RPV allows the Army to see into areas masked to other reconnaissance means and to accurately strike well beyond the forward line of own troops (FLOT) into zones protected by formidable enemy ground or air defenses.
CHARACTERISTICS:	Weight: 265 pounds at launch Endurance: 3 hours Speed: 49–98 knots
SOVIET COUNTERPART:	The Soviets are believed to have at least three tactical drones used for reconnaissance and other missions. None of them are believed to have the operational capabilities of Aquila.
PROGRAM STATUS:	The Aquila RPV is currently in engineering development. Flight tests are now under way. Development Test II and Operational II were conducted in 1986. Launch, navigation, telemetry, laser designation for Copperhead, jinking, command and control of the air vehicle, and endurance have been demonstrated.

SINGLE CHANNEL GROUND AND AIRBORNE RADIO SYSTEM (SINCGARS-V)

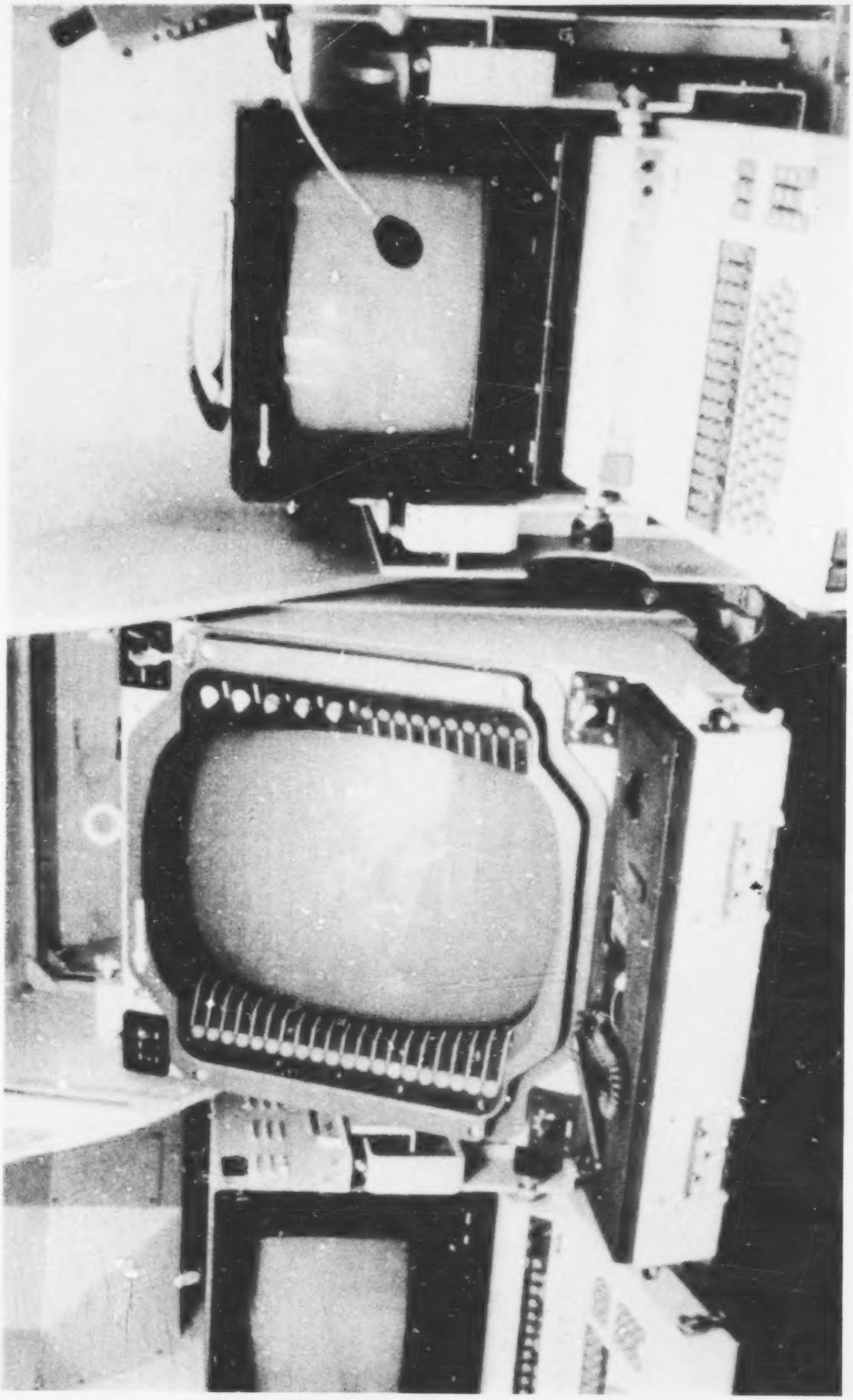
MISSION: The SINCGARS-V program provides the next generation of VHF-FM combat net radios for US forces; fielding started in 1986. This family of radios is lightweight, securable, capable of providing both voice and data transmission and possesses electronic counter-countermeasures (ECCM) features (frequency hopping). The radio configurations (manpack, vehicular, and airborne) are developed based on maximum commonality of components and reduction in logistic support requirements.

CHARACTERISTICS:

Weight:	22.5 pounds with battery and communications security (COMSEC) device
Frequency range:	30.00 to 87.975 MHz
Channels:	2,320
Channel spacing:	25 kHz
Range:	8–35 kilometers

SOVIET COUNTERPART: The Soviets have no known counterpart.

PROGRAM STATUS: SINCGARS-V has been type classified standard. The first production contract with options for a total of 44,600 radios was awarded in December 1983.



MOBILE SUBSCRIBER EQUIPMENT (MSE)

MISSION:	Mobile subscriber equipment is an area communications system that will be fielded in the corps and division areas. The MSE provides secure static and mobile (on the move) voice/data/facsimile service to principal commanders and key staff officers enabling them to exercise command and control over their forces in the rapidly changing battlefield environment. (Approximate commercial equivalent is telephone system with mobile radiotelephone service and data capability.) The corps network consists of five divisions which are composed of approximately 50 nodes and will provide service to 1,900 mobile and 10,000 static subscribers. The MSE is interoperable with joint tactical communications (TRI-TAC), combat net radios, commercial telephone, and NATO systems. It allows users to keep the same telephone number as they move on battlefield and will automatically route calls around damaged or jammed nodes. Since market surveys determined that MSE-type systems were already available the Army opted to use non-developmental item (NDI) acquisition strategy, that is, to accept the best available system as opposed to developing the "ultimate" system to save time, money, and personnel.
SOVIET COUNTERPART:	There is no known Soviet counterpart.
PROGRAM STATUS:	The Army awarded a production contract in 1986.

US ARMY WEAPONS DATA CARD

DEPARTMENT OF TACTICS
US ARMY COMMAND AND GENERAL STAFF COLLEGE
August 1984

Table B-1. Summary of Weapons—Tank Battalion/Mechanized Battalion/Infantry Battalion

H SERIES TOE

	TOW	DRAGON	Tank	Mortars	
				107mm	81mm
Tank Bn	4	4	54	4	
HHC			3		
Tank Co (x3)			17		
Co HQ			2		
Tank Plt (x3)			5		
Cbt Spt Co	4	4		4	
Scout Plt	4	4			
Hv Mort Plt				4	

	TOW	DRAGON	Tank	Mortars	
				107mm	81mm
Mech Inf Bn	22	40		4	9
Mech Rifle Co (x3)	2	12			3
Rifle Plt (x3)		4			
Weapons Plt	2				3
Cbt Spt Co	16	4		4	
Scout Plt	4	4			
Hv Mort Plt				4	
Antiarmor Plt	12				

	TOW	DRAGON	Tank	Mortars	
				107mm	81mm
Infantry Bn	18	27		4	9
Rifle Co (x3)	2	9			3
Rifle Plt (x3)		3			
Weapons Plt	2				3
Cbt Spt Co	12			4	
Hv Mort Plt				4	
Antiarmor Plt	12				

J SERIES TOE

	TOW	DRAGON	TANK	IFV	CFV	MORTARS (107mm)
Tank Bn			58		7	6
HHC			2			
Sct Plt			0		7	
Hv mort Plt						6
Tank Co (X4)			14			

Mech IN Bn	12	36	—	54	7	6
HHC				2		
Sct Plt					7	
Hv Mort Plt						6
Inf Co (X4)		9		13		
AT Co	12					

Table B-2. Summary of Weapons—Division Armored Cavalry Squadron/Armored Cavalry Regiment

	TOW	DRAGON	Tank	Mortars		OH—58A	UH—1H	AH—1S	155mm (SP)
				107mm	81mm				
Div Armd Cav Sqdn	18	20	36	9		10	8	9	
Armd Cav Trp (x3)	6	6	12	3					
Mort Sqd (x3)				3					
Cav Plt (x3)	2	2	4						
Air Cav Trp		2				10	8	9	

	TOW	DRAGON	Tank	Mortars		OH—58A	UH—1H	AH—1S	155mm (SP)
				107mm	81mm				
ACR	54	56	159	27		28	24	30	18
Armd Cav Sqdn (x3)	18	18	53	9					6
Armd Cav Trp (x3)	6	6	12	3					
Tank Co			17						
FA Btry									6
Atk Hel Trp						12	3	21	
HHT						6	13	0	
Air Cav Trp		2				10	8	9	

Table B-3. Characteristicsof US Fighting Vehicles

Weapon	Weight (tons)	Max Speed (mph)	(kph)	Cruising Range (miles)	(kilometers)	Rounds Aboard	Type Ammo	Max Open Direct Fire Range (meters)*
105-mm Gun Tank, M60A1 and M60A3	53	30	48	310	500	63	APDS-T APFSDS-T HEAT-T HEP-T WP-T APERS-T	3000 4000 4000 1200 Point Tgt 3600 Area Tgt 1200 Point Tgt 3600 Area Tgt 200—4000
105-mm Gun Tank, M48A5	54	30	48	310	500	43		
105-mm Gun Tank,M1	60	45	73	275	430	55		
165-mm Gun Tank, M728 (engr cbt veh)	57	30	48	280	451	30	HEP-T	1000
25-mm Automatic Cannon, M2/M3	24.5	41(governed)	66	300	483	(900-M2) (1500-M3)	APDS HEAT	3200m 2800m

*Range at which a target hit can be obtained using Burst On Target (BOT) method of adjustment.

Table B-4. Characteristics of US Antiarmor Missiles

Missile	Prime Mover	Weight (lbs)	Guidance Linkage	Rounds Aboard	Range (meters)
TOW	M113A1 Guided Missile Carrier or Improved TOW Vehicle (ITV) AH—1S Atk Hel M2 IFV M3 CFV	40 (round only)	Wire	10 8 7 12	3000 max 65 min 3750 max 65 min 3750 max 65 min
Dragon	Individual Soldier or Mounted on M113A1	32 (carry weight) 25.2 (round only)	Wire	6	1000 max 65 min

Table B-5. Characteristics of US Infantry Weapons

Weapon	Weight (lbs)	Rds on Indiv	Rds on Veh	Type Ammo	Ranges (Meters)
Rifle 5.56-mm M16A1	7.6 loaded	140	300	BALL	2,653 Max 350 Max Grazing Fire 250 Stationary Tgt 200 Running Tgt
Launcher Grenade 40-mm M203 Dual Purpose Weapon (DPW)	11 loaded	20	10	HEDP CS Smoke Star Cluster White Star-Parachute	400 Max 350 Area Tgt 200 Point Tgt 31 Min Safe 14—28 Min Arming*
Machinegun Cal 50 on M113A1 APC	84		100 to 2000	BALL API AP TRACER	6,800 Max 1,000 Area Tgt (APC Stationary) 800 Armored Tgt (APC Stationary) 500 Point Tgt (APC Stationary) 500 Squad Size Tgt (APC Moving)
Machinegun 7.62-mm M60	23	900	1100	BALL TRACER AP	3,725 Max 1,100 Area Tgt 600 Point Tgt
Squad Automtic Weapon (SAW) M249 5.56-mm	22.5 loaded	600		AMMO BALL TRACER	1000 Suppression 800 Area 600 Point 670 Max Grazing 900 Tracer Burnout
Rocket HE 66-mm M72A2 (LAW)	5.2		10 to 25	HE	200 Stationary Tgt 150 Moving Tgt 10 Min Arming*
Launcher, Rocket 66-mm, 4-Tube M202A1 (FLASH)	26.6 loaded	4	4	Bursting Incendiary Rocket CS Rocket	500 Area Tgt 200 Point Tgt 50 Bunker Aperature 20 Bursting Radius 6—13 Min Arming*

*Must be considered for close in firing such as in towns to insure round will explode.

*Table B-6. Effect of US Direct Fire on Soviet Type Vehicles**

Probability of Hit (PH)

Range (meters) / Weapon	50	100	175	250	500	750	1000	1500	2000	2500	3000
105mm HEP	97	94	94	92	89	75	48	42	28	17	03
105mm HEAT	97	94	94	92	89	78	55	32	15	07	03
105mm APDS	97	97	97	94	84	82	80	71	53	25	08
165mm HEP (CEV)	97	94	94	92	61	44	14				
TOE	-	67	72	89	89	89	89	89	89	89	89
DRAGON	-	85	85	85	72	72	72				
VIPER	98	90	46	22	10						
LAW	97	73	30	12	02						
.50 cal MG	99	98	88	78	65	33	18	07			
7.62 (coax)	97	83	69	56	47	39	31				
M203	42	24	15	06	02						
VULCAN	97	97	97	78	61	56	47	32			
105mm How HEAT	97	94	89	72	50	31	03				
155mm How HE	97	94	92	75	56	39	08				

Special Conditions	Adjust PH
Target Hull Down (Tank)	-30
Target Hull Down (ATGM)	-50
Target Turret Down	-60
Target Flank Exposed	+10
Target Moving	-10
Firer Moving (w/stabilization)	-10
Firer Moving (wo/stabilization)	-30
Firer Suppressed	-50
2d/3d Round at Same Target	+10

*Based on stationary firer against stationary target, viewed head-on, fully exposed.

Table B-7. Characteristics of US Mortars

Weapon	Rds on Veh	Rds Bulk Loaded	Range (Effective)		Weight Lbs	Time to Emplace Min	Rate of Fire Rds/Min	Ammo	# of Wpn Per Unit
			Min	Max					
81mm M29 M125A1	115	41	70	4595	97	7	5 sustained 30 max	HE WP Illum	3 per Mech Co
107mm M30 M106A1	83	101	920	5650	672	7	2 sustained 20 max	HE, WP Illum CS, HC	4 per Bn
181mm M252	115	41	100	5600	81	5	12 sustained 15 max	HE Smoke	6 per Inf Bn (J series TOE)

Table B-8. Characteristics of US Artillery and Air Defense Missiles

System	Range Kilometers	Weight Pounds	Number of Launchers per Unit	Fuel	Guidance	Type Warhead	Rds on Launcher
Pershing Guided Msl A1	185-470	10,275	Bn 36	Solid	Inertial	Nuc	1
Lance MGM 52C	110 (Nuc) 65 (Non-nuc)	3,360	Bn 6	Liquid	Inertial	Nuc HE	1 (2 more on loader transporter)
Patriot Air Defense Missile	80+	3,740	Bn 48	Solid	Command	HE	4
Hawk Air Defense Missile	40	1,295	Towed Bn 24	Solid	Semiactive Homing	HE	3
Chaparral M48	5	187	Bn 36	Solid	Proportional Navigation Uses passive IR homing	Continuous Rod	4 (8 more stored under launcher)
Stinger	4	34.9	6 per Team	Solid		HE	1 (2 more w/gunner)
Redeye M41	3	28.9	6 per Team	Solid		HE	

Table B-9. Characteristics of US Field Artillery and Air Defense Weapons

Weapon	Rds on Veh	Rds Bulk Loaded	Range Meters	Weight Pounds	Time to Emplace Min	Max Rate of Fire—No. Rds First 3 Min	Sustained Fire Rds per Hour	No of Weapons per Unit	Ammunition	
									Types	Fuzes
105-mm How Towed M102	40	150	11,500	3,170	3	30	180	Inf Div Bn 18 Airborne & Airmobile Bn 18 Corps Bn 18	WP HE HEAT-T CML ILUM SMK ICM APERS HEP-T	MT PD VT MTSQ PIBD
155-mm How Towed M114A2	28	161	14,600 RAP-19,300	12,700	5	12	60	Inf Div Bn 18 Corps Bn 18	FASCAM HE; WP CML DP-ICM, RAP ADAM, RAAM NUC COPPERHEAD, HC	PD, CP, MTSQ, VT, MT
155-mm How SP M109A2/A3	28/36	206	18,100 23,500 (RAP)	53,940	1	12	60	Armd & Mech Div *Bn 18/ Corps Bn 18	ILLUM SMK NUC ICM RAP DP-ICM, ADAM, RAAM, CML COPPERHEAD	CP PD MT MTSQ
155-mm How Towed M198	TBA		22,400 30,000 (RAP)	15,500	5	12	Variable	Corps Bn 18 Inf Div 18	HE RAP ICM DP-ICM ADAM RAAM NUC, HC, WP, SMK COPPERHEAD	CP, PD VT MTSQ MT
203-mm How SP M110A2	2	138	22,900 30,000 (RAP)	62,100	2	4.5	30	Inf Div Btry 4 Armd & Mech Div Bn 12 **Corps Bn 12	DP-ICM HE NUC CML RAP	CP MT VT MSTQ CP, PD
MLRS	12	96	30 km	54,000				9 SPLL/Btry AR/MECH/INF Div 27/Corps Bn	M-77 DP-ICM	Remotely Settable Electronic Time Fuze
Vulcan PIVADS	2,100	4,200	1,200 AD 2,200 Ground	26,000	N/A	AD 3,000 Cyclic 3,000	N/A	Bn 36	HEI HEIT-SD	PD
SGT York	502	1,500	4,000 AD 3,000 Ground	120,000	N/A	310 rds/min per gun	N/A	Bn 36	PFHE HCHE	PF PD

*J-Series TOE have 24 weapons per div battalion.

**European corps bn have been up-gunned to 18/bn.

Table B-10. Characteristics of US Field Artillery and Mortar Smoke

Delivery System	Type Round	Time to Build Effective Smoke	Average Burning Time	Average Obscuration Length (Meters) Per Round Wind Direction		
				Cross	Quartering	Head/Tail
155mm	WP HC	½ min 1-1½ min	1-1½ min 4 min	100 350	75 250	50 75
105mm	WP HC	½ min 1-1½ min	1-1½ min 3 min	75 250	60 175	50 50
107mm	WP	½ min	1 min	200	80	40
81mm	WP	½ min	1 min	100	60	40

Table B-11. Final Protective Fires Standard Widths/Plt/Btry

81mm mortar	100M
107mm mortar	200M
105mm howitzer	200M
155mm howitzer	300M

Table B-12. Characteristics of US Field Artillery and Mortar Flares

Type Weapon/Round	Range (meters)	Illum Time (sec)	Continuous Illum (rd per min)	Diameter of Illum Area (per rd) (meters)	Candlepower (per rd)
81mm/M301A3	3,300	75	2	1,100	500,000
107mm/M335A2	5,500	90	2	1,500	850,000
105mm/M314A3	11,500	60	2	1,000	600,000
155mm/M485*	17,500	120+	1	2,000	1,000,000

*M114A2 Howitzer range is 13,600.

Table B-13. Characteristics of US Scatterable Mines

System	Delivery	Approximate Minefield Size
M56	Helicopter	20×800 meters per sortie
RAAMS/ADAM	155-mm How	400×400 meters
GEMSS	Towed dispenser	60 meters wide per single pass
GATOR	Navy, AF aircraft	Altitude and speed dependent
MOPMS	Hand	Semi-circle—35mm radius

RAAMS:	Remote antiarmor mine system.
ADAM:	Area denial artillery munitions.
GEMSS:	Ground emplaced mine scattering system.
GATOR	Aircraft delivered system.
MOPMS:	Modular pack mine system.

Table B-14. Average Rates of March (KPH)

Type Units	On Roads		Cross-Country		KM
	Day	Night	Day	Night	Days
Foot Troops	4	3.2	2.4	1.6	20-32
Trucks, General	40	40 (Lights) 16 (Blackout)	12	8	280
Tracked Vehicles	24	24 (Lights) 16 (Blackout)	16	8	240
Truck-drawn Artillery	40	40 (Lights 16 (Blackout)	12	8	280

Table B-15. Characteristics of US AH-IS Attack Helicopter Weapons

Characteristics of US AH-1S			
Weapon	Maximum Number of Rounds	Maximum Effective Range	Maximum Rate of Fire
20-m Cannon M197 (Vulcan)	950	2,000 meters	730±50 RPM
2.75-in Rocket	38 (Two rocket pods of 19 each)	5,200 meters	
TOW Missile	8	3,750 meters	
Characteristics of US-AH-64			
30mm Chain gun	1200		
2.75 in Rocket	38 (Two rocket pods of 19 each)	5,200 meters	
Hellfire Missile	16	5,500 meters	

Table B-16. Factors for Conversion of Units
To convert A to B, multiply A by C. To convert B to A, multiply B by D

1	2	3	4
Unit	Factor		Unit
A	C	D	B
Length			
Miles	63,360 [b]	0.00001578	Inches
Miles	5,280 [b]	0.0001894	Feet
Miles	1.609	0.6214	Kilometers
Nautical miles	1.1508	0.869	Miles
Meters	3.281	0.3048	Feet
Kilometers	3,280.8	0.0003048	Feet
Inches	2.540	0.3937	Centimeters
Feet	1667	6.0	Fathom
Surface			
Square miles	27,878,400	0.00000003537	Square feet
Square miles	640 [b]	0.001563	Acres
Acres	43,560 [b]	0.00002296	Square feet
Acres	4,047	0.0002471	Square meters
Square inches	6.452	0.1550	Sq. centimeters
Square meters	10.76	0.09290	Square feet
Volume			
Cubic feet	0.025	40.0	Tons (shipping)
Cubic feet	1,728 [b]	0.0005787	Cubic inches
Cubic inches	16.39	0.06102	Cu. centimeters
Cubic meters	35.31	0.02832	Cubic feet
Cubic feet	7.481	0.1337	U.S. gallons
Cubic feet	6.232	0.1605	Imperial gallons
Cubic feet	28.32	0.03531	Liters
U.S. gallons	231 [b]	0.004329	Cubic inches
U.S. gallons	3.785	0.2042	Liters
Imperial gallons	1.201	0.8327	U.S. gallons
Fluid ounces	1.805	0.5540	Cubic inches
Velocities			
Miles per hour	1.467	0.6818	Feet per second
Meters per second	3.281	0.3048	Feet per second
Meters per second	2.237	0.4470	Miles per hour
Pressure			
Atmos. (mean)	14.70	0.0680	Lbs. per sq. in.
Atmos. (mean)	29.92	0.03342	In. of mercury
Lbs. per sq. inch	2.036	0.4912	In. of mercury
Feet of water	62.42	0.01602	Lbs. per sq. foot
Weight			
Ounces	0.0625	16.0	Pounds
Pounds	7,000.0 [b]	0.0001429	Grains (avoir.)
Kilograms	2.205	0.4536	Pounds
Short tons	2,000	0.0005	Pounds
Long tons	1.120[b]	0.8929	Short tons
Angular Measure			
Circle	360.0		Degrees
Degree	60.0		Minutes
Degree	17.8	0.056	Mils
Mil [a]	3.37	0.297	Minutes
Minute	60		Seconds

NOTES

[a] A mil is the angle subtended by an arc of 1 unit on a radius of 1,000 units or, in other words an angle the tangent of which is approximately (small angles) 1/1,000. The arbitrary value of the mil adopted by the United States Army is 1/6,400 of a circle.

[b] Exact values.

Table B-17. AIRCRAFT PERFORMANCE CHARACTERISTICS

- ***Speed and endurance.*** **Cruise speed (with armament) is 120 knots (221 kilometers per hour). Nap of the earth flight speed averages about 35 knots (65 kmph). Fuel consumption averages about 700 pounds per hour. With a full load of fuel (1,703 pounds) endurance is about two hours (plus a 30-minute reserve).**

- ***Ordnance mix options.*** **Loading all weapon systems to maximum capacity will exceed the maximum gross weight of the AH—1S. The following table provides some possible ammunition and fuel loading options, all of which load the AH—1S to its maximum gross weight (10,000 pounds). Endurance times shown do not include a 30-minute reserve.**

Fuel (lb)	Endurance (hrs+min)	20-mm	TOW	2.75-in Rocket
1,700	2+00	0	8	0
1,700	2+00	950	0	0
1,700	2+00	240	0	38
1,700	2+00	300	2	22
1,400	1+30	300	4	32
1,050	1+00	300	8	28

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Part One The Army

Chapter 1 The Foundations of the Army
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Appendix A Glossary of Acronyms, Abbreviations, and Definitions
Appendix B Army Weapon Systems

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